Vol. 922 Number 4

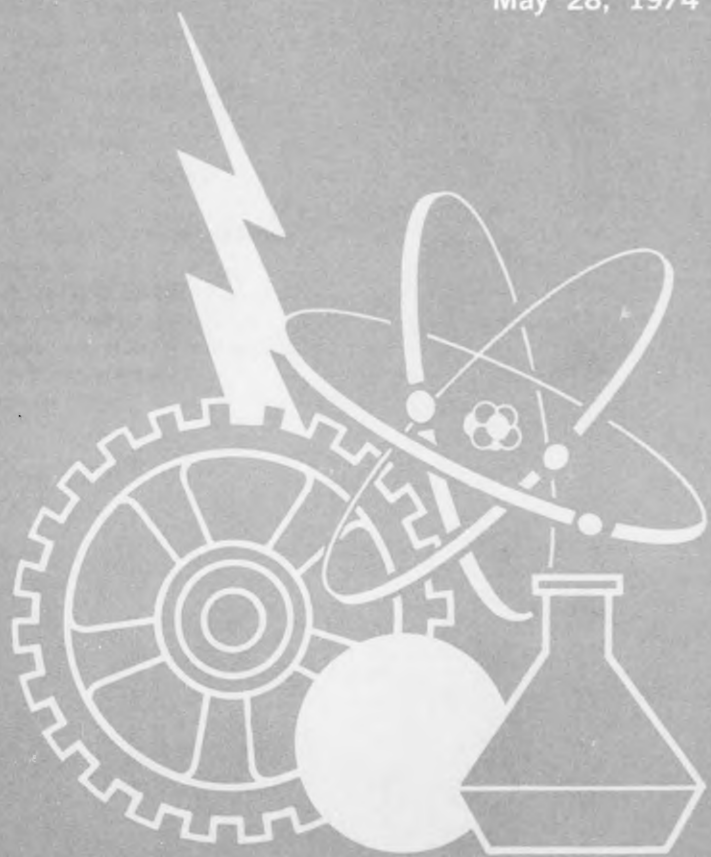
OFFICIAL GAZETTE

of the
UNITED STATES PATENT OFFICE

A UNITED STATES DEPARTMENT OF COMMERCE PUBLICATION

PATENTS

May 28, 1974



U. S.
DEPARTMENT
OF COMMERCE

Patent
Office

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

May 28, 1974 Volume 922 Number 4

CONTENTS

	Page
Patent and Trademark Notices	
Practice Re Markush-Type Claims	1016
Trademark Registration Treaty	1016
Patent Suits	1018
Patent Notices	
Certificates of Correction for the Week of May 28, 1974	1020
Disclaimers	1020
National Technical Information Service	1020
Condition of Patent Applications	1023
Reissue Patents Granted (28,019)	1024
Plant Patents Granted (3,556)	1026
Patents Granted	
General and Mechanical (3,812,539)	1027
Chemical (3,813,218)	1203
Electrical (3,813,468)	1252
Design Patents Granted (231,683)	1311
Index of Patentees	PI 1
Indices of Applicants of Plants and Designs	PI 35
Classification of	
Patents (Including Reissues)	PI 37
Designs and Plants	PI 39
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 40
Designs and Plants	PI 41

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENTS SECTION), issued weekly, subscription $211.00 per annum, foreign mailing $52.75 additional; single copies $4.10 each.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly, subscription $60.25 per annum, foreign mailing $15.10 additional; single copies $1.25 each.

CIRCULARS OF GENERAL INFORMATION concerning PATENTS or TRADEMARKS, price 15 cents each.

PRINTED COPIES OF PATENTS are furnished by the Patent Office at 50 cents each; PLANT PATENTS in color, $1.00 each; copies of TRADEMARKS and DESIGN PATENTS at 20 cents each. Address orders to the Commissioner of Patents, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.O.

PATENT OFFICE NOTICES

Practice Re Markush-Type Claims

This notice deals with Markush-type claims which include a plurality of alternatively usable substances or members. In most cases this recitation by enumeration is used because there is no appropriate or true generic language.

Where an application claims two or more independent and distinct inventions, the Commissioner, under the provisions of 35 U.S.C. 121, may require the application to be restricted to one of the inventions.

A Markush-type claim is directed to "independent and distinct inventions," if two or more of its members are so unrelated and diverse that a prior art reference anticipating the claim with respect to one of the members would not render the claim obvious under 35 U.S.C. 103 with respect to the other member(s).

If the claim is of that nature, the examiner is authorized to reject it as an improper Markush claim and for misjoinder under 35 U.S.C. 121 and to require the applicant to restrict the application to a single invention. In making such a requirement, the examiner will (1) clearly delineate the members or groups of members believed to constitute improperly joined inventions, and (2) state reasons fully explaining why they are independent and distinct. Applicant's response to such a requirement should be an election of a single adequately disclosed and supported invention, with or without restriction of the claim(s) to that invention. Of course, the response must not introduce new matter into the application. See 35 U.S.C. 132 and *In re Welstead*, 59 CCPA 1105, 463 F. 2d 1110, 174 USPQ 449 (1972). A refusal to elect a single invention will be treated as a non-responsive reply.

If the members of the Markush group are sufficiently few in number or so closely related that a search and examination of the entire claim can be made without serious burden, the examiner is encouraged to examine it on the merits, even though it is directed to independent and distinct inventions. In such a case, the examiner will not follow the procedure outlined in the preceding paragraph and will not require restriction.

Where the examiner has rejected the claim and required restriction and the applicant has responded without restricting the claim(s) to a single invention, the examiner shall, if the position is adhered to, again reject the claim and any other Markush claims not restricted to the elected invention. No further examination of these claims is required unless and until such rejection has been overcome. However, if the search of the single elected invention develops prior art which would render both the elected invention and the improper Markush claim(s) unpatentable, such prior art may be applied in rejections of both without a complete search of the subject matter of the improper Markush claim(s). Otherwise, only true generic claims and those restricted to the elected invention will be examined in the usual manner.

Review of the rejection will be by appeal to the Board of Appeals under 35 U.S.C. 134.

C. MARSHALL DANN,
Commissioner of Patents.

May 1, 1974.

Trademark Registration Treaty

Trademark Act of 1946

The text of the Trademark Registration Treaty (TRT), signed on June 12, 1973, was reproduced in the OFFICIAL GAZETTE of July 24, 1973 and three post-conference documents were published in the OFFICIAL GAZETTE of March 12, 1974. The questions of United States ratification and of the legislation which would be necessary for its implementation in the United States are now under study in the Patent Office. Interested persons and organizations have been requested to submit their views on these questions to the Patent Office prior to September 1, 1974.

Reproduced below is an outline of the changes in the Trademark Act of 1946 which might be required, or desirable, if the TRT is ratified and implemented. This outline is intended as a guideline to possible legislation designed to implement the requirements of the Treaty and to provide equivalent benefits to national applicants.

In regard to a few of the provisions, alternatives have been indicated. Where this is done, the order of their presentation herein does not necessarily indicate any order of preference.

This material, as well as that previously published, is made available in order to assist interested persons in their own studies of the question of ratification by the United States and implementing legislation rather than constituting a position of the Patent Office on these questions.

C. MARSHALL DANN,
Commissioner of Patents.

Apr. 29, 1974.

OUTLINE

Introduction

This paper is an outline of possible changes in the Trademark Act of 1946 (60 Stat. 427; 15 U.S.C. 1051 et seq.), as amended, which may be required or desirable if the Trademark Registration Treaty, signed by the United States and thirteen other countries as of December 31, 1973, is ratified and implemented.

The subject is dealt with in two parts. Part I outlines changes in the domestic trademark statute which would be applicable in the case of national applications to register marks in the United States Patent Office. Part II concerns additional provisions which would be necessary in order to assimilate the proposed Treaty to this national law.

For convenience, reference is made, following some of the sections, to the article of the Treaty which requires or gives rise to the change under consideration.

PART I—CHANGES IN THE TRADEMARK ACT OF 1946, AS AMENDED

A. *Requirements for Registration on the Principal Register*

1. As an alternative to actual use, a trademark, service mark, certification or collective mark, can be registered by a person based on a declared intention to use the mark in commerce. [Article 19(3), (4)]. Special use requirements are applicable to registrations secured on this basis. (See B below).
2. As an alternative to signing by the applicant, an application may be signed by a duly appointed representative. (Article 26). Present qualifications for representative before the Patent Office (attorney admitted to practice in a State or District of Columbia) continue to apply, however.
3. Verified statement of the claim to ownership is no longer required (Article 5).

B. *Special Requirements for Intent Applicants/Registrants*

1. (*a*) Applicant/registrant must commence use of the mark in commerce within three years of filing date and must declare such commencement of use during the fourth year, including the same details, etc., use dates, label specimens, etc.) as those declared by a use applicant at time of filing. [Article 19(3)].
   (*b*) Time period for filing the declaration may be shortened (three months from date of notice) on petition of interested person if the mark is involved in any proceeding under the Act on or after date of expiration of the three year use moratorium.
   Alternative: Shorter period for filing the declaration (e.g., 3½ years) and delete (*b*) above.
2. Consequence of failure to file an acceptable declaration within the prescribed time limit is cancellation of the registration or, if still pending, refusal of the application. Consequence of compliance as to part only of the goods and/or services is limitation of the registration or application to those goods and/or services. [Article 19(3)].
3. Time period for commencement of use may be extended beyond three years only upon showing of special circumstances which justify non-use.
4. Where later intent application(s) for same mark is (are) filed by the same or a related person prior to four (*Al-*

ternative: five) years from the filing date of the earliest one, the period for commencement of use (three years) is counted from the filing date of earliest application. This provision means that a person cannot abuse the intent to use provisions by filing successive intent applications at or close to the expiration of successive three year periods, securing a new three year moratorium on use requirements with each new case. [Article 19(3)].

C. *Related Company Provision*

A minor change provides that intended use as well as use may inure to benefit of a related company. Thus, for example, an intent application by a parent company would be valid if the evidence supporting the intent concerned adoption of the mark by and related activities of a controlled subsidiary.

D. *Registration on the Principal Register*

1. If a registration based on an intent application is issued before the declaration of use is filed, the certificate of registration indicates this fact in lieu of the dates of use.
2. *Date of registration* is the same date as the filing date, which is defined as the date on which all basic elements of an application are received by the Patent Office. (See Trademark Rule 2.21.) Certificate also indicates the *date of issue*, defined as the date of the OFFICIAL GAZETTE in which notice of the issuance of the registration is published. [Article 11(2)].
3. A certificate of registration is prima facie evidence of the validity of the registration, the right of the registrant to exclude any other person from securing or maintaining a confusingly similar registration, and the exclusive right to use only for those goods or services in respect of which the mark is declared in the certificate of registration, or in a subsequently filed declaration of use, to be in use in commerce.

E. *Duration of Registration, Sixth Year Affidavit and Renewal*

1. Term of registration and of renewal is changed from twenty years to ten years, counted from the *date of registration*. [Article 17].
2. Sixth year affidavit of use remains applicable to all registrations, with its due date counted from *date of issue* of the registration (Change only in terminology).

   Alternative: Same, except that due date is counted from *date of registration*.
3. Sixth year affidavit must show use *in commerce*.
4. A renewal application need not be verified. (Article 17).
5. A late renewal application may be filed within six months (rather than three) after the date of expiration of the term. (Article 17).

F. *Assignment*

An application or registration based on intent is not assignable prior to filing the declaration of use. Exception: successor to the entire business of the original applicant.

Alternative: Assignments of registered or applied for marks without good will are valid.

G. *Examination Procedure and Oppositions*

1. Time for response to office actions is reduced from six months to three months. Purpose is to expedite completion of ex parte examination in maximum number of cases prior to cut-off. (See 3 below).
2. No mark may be refused ex parte for a reason *not* communicated to applicant prior to fifteen months from the filing date. This limitation is not applicable to a refusal determined by a decision of the TTAB or a court. [Article 12(2)].
3. Cut-off at twelve months from filing date for publication of the mark for opposition, whether or not the ex parte examination, including any appeal therefrom, has been completed. If an opposition is filed against a still pending case, full opposition proceedings are deferred until completion of the ex parte examination. If the opposed mark is eventually determined to be registrable, then full opposition proceedings are commenced, unless the opposer withdraws. [Article 12(2)].

   Alternative: Publish all marks promptly after filing and receive oppositions concurrently with the ex parte examination, deferring full opposition proceedings (as above), however, until completion of the ex parte examination.
4. Oppositions need not be verified and may be filed by a duly authorized attorney.
5. Time to oppose may not be extended to a date later than fifteen months, counted from the filing date. [Article 12(2)].

H. *Cancellation of Registrations*

1. A petition to cancel need not be verified and may be filed by a duly authorized attorney.
2. The time period for cancellation based on unrestricted grounds (i.e., 5 years) is counted from the *date of issue* of the registration (Change only in terminology).

I. *Incontestability*

The time period for incontestability is counted from the *date of issue* of the registration (Change only in terminology).

J. *Appeals*

Minor change provides for an appeal from a refusal to accept a declaration of use.

K. *Constructive Notice*

Constructive notice is applicable from *date of issue* of registration (Change only in terminology).

Alternative: Constructive notice applicable as of the date of first publication.

L. *The Supplemental Register*

1. Special Requirement of one year's use prior to filing date is deleted, making Supplemental Register registrations subject to the same use requirements, i.e., use or intention to use, as registrations on the Principal Register. [Article 19(3)].
2. Petition to cancel a Supplemental Register registration need not be verified and can be filed by a duly authorized attorney.
3. Non-use is a ground for cancellation only after expiration of three years from the filing date. [Article 19(3)].

M. *Infringement Remedies, Evidence and Priority*

1. Owner of a registration based on an intent application may not start any action for infringement until the declaration of use has been filed and accepted. Any remedies for infringement of registered marks based on intent are applicable only to period after commencement of continuing use. [Article 19(3)].
2. A certificate of registration is prima facie evidence of exclusive right to use only for those goods or services in respect of which the mark is declared in the certificate of registration, or in a subsequently filed declaration of use, to be in use in commerce. (Consistent wtih M 1 above).
3. In an action based on an incontestable registration, defense based on innocent adoption and continuous use (i.e., section 33(b)(5)) is subject to the condition that the defendant must be innocent of knowledge not only of prior use of the registrant, but, where applicable, of registration based upon a previously filed declaration of intention to use.
4. For the purpose of determining priority of rights in *any* proceeding under the Act, an application or registration based on intent to use is accorded the same effect *as if* the applicant or registrant had commenced use of the mark in commerce on the filing date. Except where priority is accorded in a Patent Office proceeding, or in an appeal therefrom, prior to three years from the filing date, a condition to the according of priority on this basis is filing and acceptance of the declaration of use. [Article 19(3)].

N. *International Convention Provisions*

1. The waiver of use requirements for an application based on registration of the mark in a country with which we have a treaty relationship is deleted. Since all applicants have the alternative of securing a registration based on an intention to use the mark in commerce, the waiver of use requirements is no longer necessary and such applications are subject to all requirements of the Act. Similarly, the first sentence of section 44(c) is deleted, being unnecessary in view of the general limitation on

actions for infringement based on unused marks. (See M 1).

2. A minor change in section 44(d)(4) provides that a registration based on intent is not subject to the limitation of this subparagraph if the declaration of use has been accepted prior to issuance of the registration.

O. *Definitions*

1. The words "or intended to be used" are inserted in several of the definitions to take into account the new basis for registration.
2. Filing date, date of issue and date of registration are defined. (See D 2). Careful definition of "filing date" is important since it is the basis for determining the priority of intent applications. (See M 4).
3. The definition of abandonment is modified to the extent that non-use for two consecutive years is prima facie abandonment only if the two year period terminates on a date later than the date of expiration of three year use moratorium. Also, failure to commence use within the prescribed period, coupled with absence of any intention to commence use, constitutes abandonment. [Article 19(3)].

PART II—IMPLEMENTATION OF TRADEMARK REGISTRATION TREATY

A. *Definitions*

For purposes of the Act, an international application, international registration or later designation under the Trademark Registration Treaty (TRT) is defined to include only one which designates the United States; contains a declaration of intention to use the mark in commerce with or in the United States (or is accompanied by a declaration of actual use of the mark in such commerce); and is published and communicated to the Patent Office as required by the TRT. [Articles 10, 11, 19(4)].

B. *Effect in the United States of Proceedings Under the Treaty*

1. International applications, international registrations and later designations as defined above (See A), and the recordings related thereto, are accorded all of the effects, and their applicants or owners are entitled to all of the benefits, in the United States provided by the TRT, subject to all of the requirements of the TRT and, except as listed below, of the Trademark Act.
2. Exceptions to full application of the Trademark Act are:
   (*a*) The fee referred to in section 1 is waived. (*Note:* A fee equivalent to the U.S. application fee is paid to the International Bureau and the amounts of the fees collected on behalf of the United States are paid to the U.S. in lump sums.) [Article 19(1)].
   (*b*) The requirement to designate an agent for service in the application [i.e., present section 1(d)] is waived, provided that such person must be designated on or prior to date on which the owner replies to any communication by the examiner or otherwise institutes or defends any proceeding under the Act. Until such person has been designated, notices or process may be served upon the Commissioner. Consequence of failure to designate such person on or prior to the first to occur of the above events is cancellation of any effect of the international registration in the United States. [Article 19(7)].
   (*c*) A certificate of registration issued by the Patent Office based on an international registration shall also indicate the number and date of the international registration to which it relates.
   (*d*) The *filing date* under the Act of an international registration is the international registration date. The *date of issue* is the date on which registration effect in the United States of an international registration comes into existence pursuant to a notice to this effect published in the OFFICIAL GAZETTE, as in the case of publication of issuance of a national registration. [Article 11(1)(2)].
   (*e*) The recording of a change in ownership, or in the name of the owner, of an international registration shall not be accorded any effect as the recording of an assignment unless, within three months from the date of publication of such recording under the TRT, instruments of assignment conforming to the requirements of the Trademark Act are recorded in the Patent Office. [Article 14(4)].
   (*f*) Renewal of the effect of an international registration in the United States by the International Bureau is not subject to the requirements of section 9, provided that the registrant shall file in the Patent Office, prior to the expiration of six months counted from the starting date of the term of renewal, a declaration as to use of the mark in commerce. Consequences of failure to file an acceptable use declaration are the same as in the case of failure to file or filing of an unacceptable fourth year declaration of use (See Part I, B 2).

   Note: The renewal fee is collected and distributed in the same way as the filing fee. (See (*a*) above.) [Article 17, 19(1), 19(3)].

C. *Authority of the Commissioner*

The Commissioner is authorized to accord and deny effects, communicate notifications, make attestations, decide petitions, determine the amount of and receive payments of fees, and perform all other acts as provided by the TRT, subject to the requirements thereof.

D. *Notifications*

The Commissioner is required to effect all required notifications promptly. Where the time limitation of the TRT is stated in terms of the date of receipt, the notification shall be transmitted to the International Bureau no later than 14 days from the due date via Registered Air Mail.

* * * * *

Final Note: The above outline does not include final provisions concerning the effective date of certain changes. Generally, changes that might have an effect on existing rights would be effective only as to applications filed on or after the effective date of the amended Act.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,879,120, Howe and Burr, LONG TWO PART FOLDING TABLE; **2,974,555,** C. W. Andersen, ELECTRONIC PIANO, **filed** July 30, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c1949, *Musitronic Inc.* v. *The Wurlitzer Co.*

2,944,917, A. Cahne, METHOD OF COATING A METAL BASE WITH POLYTETRAFLUOROETHYLENE; **3,008,601,** same, POLYTETRAFLUOROETHYLENE COATED COOKING UTENSILS, **filed** July 31, 1973, D.C. Md. (Baltimore), Doc. 73–769–HM, *T-Fal Corporation* v. *Tefal, S.A.*

2,974,555. (See 2,879,120.)

3,008,601. (See 2,944,917.)

3,073,536, J. N. Quinn, PORTABLE CRUSHING PLANT; **3,409,235,** same, **filed** Nov. 17, 1972, D.C., E.D. Wis. (Milwaukee), Doc. 72–C–634, *John N. Quinn and Johnson Welding & Equipment Co.* v. *Lippmann, Inc. and Edmund Lippmann and Gladys Lippmann, doing business as Gilco Co.*

3,117,332, H. Goldman, BUTTON ASSEMBLY FOR PILOT'S HELMET; **3,137,017,** Pfleger and Ramer, ADJUSTABLE DOCKBOARD; **3,203,002,** G. McGuire, ADJUSTABLE DOCKBOARD WITH COUNTERBALANCING EXTENSION LIP; **Re. 25,249,** G. P. Kelley, ADJUSTABLE DOCKBOARD, **filed** Dec. 5, 1969, D.C., E.D. Wis. (Milwaukee), Doc. 69–C–590, *Kelley Company, Inc.* v. *Rite-Hite Corp.* Judgment, ordered, plaintiff owner of said patents, Patent Re. 25,249, claims 1, 11 and 13 thereof valid, Patent 3,117,332, claims 1, 2, 7 and 9 thereof valid, Patent 3,137,017, claim 1 thereof valid, Patent 3,203,002, claims, 1, 16, 17 and 20 thereof valid, defendant has infringed said claims, a writ of injunction issue to defendant enjoining and restraining them from infringing said patents and claims thereof, June 27, 1973.

3,136,248, J. R. Anderson, PROCESS AND APPARATUS FOR TEMPORARILY INDICATING CORRECTIONS IN TEXT OF PRINTED MATTER, **filed** Sept. 12, 1967, D.C., N.D. Ill. (Chicago), Doc. 67c1565, *La Salle Street Press, Inc.* v. *McCormick and Henderson, Inc.*

3,137,017. (See 3,117,332.)

3,151,503, Keller and Keller, TRANSMISSION SYSTEM; **3,231,117,** Melroe and Keller, TRACTOR VEHICLE AND DRIVE THEREFOR; **D. 195,254,** Keller, Keller and Melrose, SELF-PROPELLED LOADER, **filed** July 24, 1973, D.C., S.D. N. Dak. (Fargo), Doc. C–4839, *Louis J. Keller and Cyril N. Keller* v. *Clark Equipment Company and Clark Equipment, A.G.*

3,203,002. (See 3,117,332.)

3,231,117. (See 3,151,503.)

3,238,876, R. C. Allen, METHOD FOR THROUGH-BULKHEAD SHOCK INITIATION, **filed** Aug. 10, 1973, Ct. of Claims (District of Columbia), Doc. 254–73, *Teledyne McCormick Selph* v. *The United States.*

3,277,594, Rogers, Taylor and Broggie, ANIMATING APPARATUS, **filed** Aug. 7, 1973, D.C. C.D. Calif. (Los Angeles), Doc. 73–1832–LTL, *Walt Disney Productions* v. *Six Flags Over Mid-America, Inc.*

3,316,574, R. L. Pare, ROAD EXPANSION JOINT; **Re. 26,733,** J. A. Welch, ELASTOMERIC EXPANSION JOINT, **filed** Nov. 9, 1972, D.C., W.D.N.Y. (Buffalo), Doc. C–1972–592, *Watson-Bowman Associates, Inc.* v. *The General Tire & Rubber Company.* Stipulation and order of dismissal filed July 24, 1973.

3,322,515, Dittrich and Shepard, FLAME SPRAYING EXOTHERMICALLY REACTING INTERMETALLIC COMPOUND FORMING COMPOSITES, **filed** Jan. 17, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c126, *Metco Inc.* v. *Metallizing Co. of America.* Pursuant to memorandum opinion, defendant's motion for change of venue granted and action transferred to U.S. District Court for the Southern District of New York, Sept. 5, 1972.

3,384,240, Martin J. Berardi, ACTIVATED CHARCOAL FILTER ASSEMBLY HAVING BACKWASH MEANS; **3,459,305,** same, FILTERING APPARATUS, **filed** June 25, 1973, D.C. Fla. (Miami), Doc. 73–1092–C–JE, *Martin J. Berardi* v. *Arroyal Industries, Inc., John A. Dacy and James J. McCarthy.*

3,409,235. (See 3,073,536.)

3,459,305. (See 3,384,240.)

3,484,905, R. Eberhardt, BUNDLE TIE, **filed** July 30, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1877, *All States Plastic Mfg. Co. Inc.* v. *Weckesser Co. Inc.* Judgment order: Ordered claims 1 to 8 of patent invalid, claims 1 to 8 of patent not infringed, complaint dismissed with prejudice, defendant's counterclaim is sustained as to the invalidity and non-infringement of claims 1 to 8, inclusive, July 31, 1973.

3,527,194, Vadas and Desrochers, GAS-POWERED PISTOL; **Re. 27,568,** same, **filed** Apr. 6, 1973, D.C., M.D. Fla. (Tampa), Doc. 73–183–C T.K., *The Coleman Company, Inc.* v. *Bangor Punta Operations, Inc.*

3,536,141, R. W. Woelfel, OVER CENTER TOGGLE MOUNTING OF PLOW; **3,561,541,** same, TRACTOR AND IMPLEMENT HYDRAULIC CONTROL SYSTEM, **filed** Aug. 10, 1973, D.C., E.D. Wis. (Milwaukee), Doc. 73–C–430, *Roger W. Woelfel* v. *Allis-Chalmers Mfg. Co.*

3,542,214, J. Helms, STACKING AND TRANSMISSION DEVICE FOR PACKAGES, **filed** Aug. 24, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–2022–AAH, *Harry Feick Co., Inc.* v. *Entron Controls, Inc. and W. E. Starr and Company.*

3,561,541. (See 3,536,141.)

3,567,057, W. J. Landen, BOTTLE SAFETY CLOSURE; **Re. 27,673,** same, **filed** Aug. 13, 1973, D.C. Del. (Wilmington), Doc. 4703, *Anchor Hocking Corporation* v. *The Eyelet Specialty Company.*

3,627,973, E. E. Smith, SUCCESSIVE AUTOMATIC DEPOSITION OF CONTIGUOUS WELD BEADS UPON NONPLANAR SURFACES, **filed** Nov. 3, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–2629–LTL, *D. & W. Rankin Manufacturing Company* v. *Teledyne, Inc.* Filed stipulation of dismissal with prejudice of complaint and first counterclaim, and order thereon, July 30, 1973.

3,649,039, Gertsch and Gertsch, LONGITUDINALLY ADJUSTABLE HEEL LOCKING DEVICE ON A SKI-BINDING, **filed** Mar. 22, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c735, *Gertsch AG* v. *Safety Systems Inc.* Stipulation order, cause dismissed with prejudice, Dec. 1, 1972.

3,654,854, Cook and McCartney, REFUSE PACKER, **filed** Aug. 6, 1973, D.C. Iowa (Cedar Rapids), Doc. 73–C–35–CR, *Uhrden, Inc.* v. *Mid Equipment, Inc.*

3,666,854, A. M. Eisentraut, TEST FOR THYROID HORMONE, **filed** Aug. 3, 1973, D.C., S.D. Tex. (Houston), Doc. CA 73–H–1090, *Nuclear-Medical Laboratories, Inc.* v. *United Medical Laboratories, Inc.*

3,671,006, I. L. Berkowitz, REFRIGERATOR WALL PANELS WITH PANELS FASTENERS AND APPARATUS FOR MAKING SAID PANELS, **filed** July 23, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–1688–R, *Kason Hardware Corporation* v. *Consolidated Tooling Inc., Roy F. Smith and Lois Smith.*

3,696,995, W. Kasner, CALCULATOR; **3,706,875,** same, **filed** Aug. 15, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–1912–AAH, *Bandwagon, Inc.* v. *Diamond International Corporation and William Kasner.*

3,706,875. (See 3,696,995.)

Re. 25,249. (See 3,117,332.)

Re. 25,570, J. H. Lemelson, EXTRUSION APPARATUS, **filed** Aug. 13, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c2074, *Discovery rights, Inc.* v. *American Can Company.*

Re. 26,733. (See 3,316,574.)

Re. 27,568. (See 3,527,194.)

Re. 27,673. (See 3,567,057.)

D. 226,977, W. H. Oliver, SOFA OR SIMILAR ARTICLE; **D. 227,834,** same **filed** Aug. 16, 1973, D.C., W.D. Wash. (Seattle), Doc. 497–73C2, *William H. Oliver* v. *Ronald Morse et al.*

D. 195,254. (See 3,151,503.)

D. 227,834. (See D. 226,997.)

Certificates of Correction for the Week of May 28, 1974

Re. 27,649	3,752,098	3,767,639	3,778,177
Re. 27,704	3,752,741	3,767,682	3,778,335
Re. 27,728	3,752,862	3,767,762	3,778,483
D. 228,226	3,752,967	3,767,806	3,778,545
3,467,840	3,753,634	3,767,978	3,778,815
3,549,611	3,753,721	3,768,091	3,778,890
3,582,162	3,754,259	3,768,309	3,779,224
3,625,260	3,755,047	3,768,526	3,779,818
3,671,512	3,756,849	3,768,547	3,779,922
3,689,381	3,756,971	3,768,646	3,780,007
3,693,588	3,757,286	3,769,239	3,780,053
3,699,657	3,758,580	3,769,454	3,780,233
3,703,958	3,759,200	3,769,491	3,780,327
3,704,400	3,759,470	3,769,602	3,780,543
3,709,819	3,760,006	3,769,759	3,781,231
3,711,872	3,760,406	3,769,796	3,781,490
3,714,201	3,760,638	3,770,132	3,782,340
3,720,198	3,760,694	3,770,893	3,782,363
3,727,670	3,762,741	3,771,730	3,783,072
3,730,900	3,762,942	3,772,123	3,783,255
3,732,544	3,763,325	3,772,673	3,783,400
3,732,832	3,763,473	3,772,687	3,783,611
3,738,298	3,764,000	3,772,748	3,783,628
3,738,738	3,764,083	3,772,936	3,784,726
3,738,932	3,764,311	3,774,101	3,785,315
3,739,532	3,765,094	3,774,199	3,785,373
3,742,070	3,765,728	3,774,676	3,787,333
3,742,939	3,766,049	3,774,684	3,787,957
3,746,474	3,766,184	3,774,808	3,788,028
3,746,617	3,766,292	3,774,212	3,788,670
3,747,306	3,766,666	3,775,242	3,788,702
3,748,112	3,766,853	3,775,386	3,788,963
3,749,672	3,766,985	3,775,679	3,790,573
3,749,823	3,766,999	3,775,705	3,791,325
3,750,021	3,767,324	3,776,053	3,792,553
3,751,067	3,767,501	3,776,577	3,792,614
3,751,549	3,767,564	3,777,793	
3,752,043	3,767,638	3,778,114	

Disclaimers

3,796,783.—*James E. Grecver,* De Witt, N.Y. METHOD OF PRODUCING A PLASTIC BOND BETWEEN FIRST AND SECOND TUBULAR TUBE MEMBERS. Patent dated Mar. 12, 1974. Disclaimer filed Nov. 8, 1973, by the assignee, *Carrier Corporation.*

Hereby disclaims the portion of the term of the patent subsequent to June 18, 1989.

3,786,460.—*Pierre Kaltenbach,* New York, N.Y. LIGHT DETECTION MONITORING DEVICE. Patent dated Jan. 15, 1974. Disclaimer filed June 26, 1973, by the inventor.

Hereby disclaims the portion of the term of the patent subsequent to July 31, 1990.

3,794,556.—*Donald G. Young,* Glendale, Ky. PRIMER COMPOSITION FOR ADHERING SILICONE ELASTOMER TO SUBSTRATES. Patent dated Feb. 26, 1974. Disclaimer filed July 25, 1973, by the assignee, *Dow Corning Corporation.*

Hereby disclaims the portion of the term of the patent subsequent to July 18, 1991.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for licensing in accordance with the licensing policy of each agency-sponsor.

Copies of Patent applications, either paper copy (PC) or microfiche (MF), can be purchased from the National Technical Information Service (NTIS), Springfield, Va. 22151, at the prices cited. Requests for copies of patent applications must include the patent application number and the title.

Paper copies of patents cannot be purchased from NTIS but are available from the Commissioner of Patents, Washington, D.C. 20231, at $0.50 each.

Requests for licensing information should be directed to the address cited below for each agency.

DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

U.S. ATOMIC ENERGY COMMISSION
Assistant General Counsel for Patents,
Washington, D.C. 20545

Patent application 276,211. Glass Polymer Composites. Filed July 28, 1972. PC $4/MF $1.45.

DEPARTMENT OF THE AIR FORCE
AF/JACP, Washington, D.C. 20314

Patent application 273,004. Method of Fabricating Hollow Balls for Use in Rolling Contact Bearing Applications. Filed July 18, 1972. PC $4/MF $1.45.

Patent application 273,005. Pressure Control System for G-suit. Filed July 18, 1972. PC $4/MF $1.45.

Patent application 276,338. Teflon-Lined Bearing Improvement. Filed July 31, 1972. PC $4/MF $1.45.

Patent application 288,212. Vertical Rate Reference Computer for Control of a VTOL or STOL Aircraft at a Constant Flight Path Angle. Filed Sept. 11, 1972. PC $4.75/MF $1.45.

Patent application 293,692. Method for Modifying Polyhydroxy Ethers. Filed Sept. 29, 1972. PC $4/MF $1.45.

Patent application 295,787. Benzofuroisoquinoline Polymers and Method for Synthesizing Same. Filed Oct. 6, 1972. PC $4/MF $1.45.

U.S. DEPARTMENT OF AGRICULTURE
Chief Research Agreements and Patent Mgmt. Branch,
Federal Building, General Services Division,
Agricultural Research Service,
Hyattsville, Md. 20782

Patent application 272,824. Fire and Wrinkle Resistant Organic Textiles Through Treatment With a Methylol Phosphine and an Aziridinyl Phosphorus Compound. Filed July 18, 1972. PC $4/MF $1.45.

Patent application 274,949. A Dehydration Process to Impart Wrinkle Resistance to Cellulose-Containing Fibrous Materials. Filed July 25, 1972. PC $4/MF $1.45.

Patent application 275,012. Improved Method of Purifying Concentrated Color Extracts From Citrus Peels. Filed July 25, 1972. PC $4/MF $1.45.

Patent application 279,919. Preparation of Crosslinked Polyethylenimine and Impregnation of Cellulosic Material With in Situ Crosslink-Polymerized Ethylenimine. Filed Aug. 11, 1972. PC $4/MF $1.45.

Patent application 288,802. N-Ethyl-N-3-Ethoxypropyl-Oleamides. Filed Sept. 13, 1972. PC $5/MF $1.45.

Patent application 288,806. Method of Increasing Covering Power of Knitted Cotton Fabric. Filed Sept. 13, 1972. PC $4/MF $1.45.

Patent application 288,807. The Preparation of Dibasic Dimeric Resin Acids. Filed Sept. 12, 1972. PC $4/MF $1.45.

Patent application 288,814. N,N-Di-n-Butyl-2-(Oleoyloxy) Propionamide. Filed Sept. 13, 1972. PC $5/MF $1.45.

Patent application 298,167. Recurable Crosslinked Cellulose Fabrics From Methylol Reagents and Polycarboxylic Acids. Filed Oct. 16, 1972. PC $4.75/MF $1.45.

Patent application 306,774. Production of Phosphorus and Nitrogen Containing Compounds and Polymers and Flameproofing Organic Textiles. Filed Nov. 15, 1972. PC $4/MF $1.45.

Patent application 324,136. Flameproofing of Cotton Cellulose With Hexamethyl Phosphorous Triamide. Filed Mar. 16, 1973. PC $4/MF $1.45.

Patent application 335,860. Phosphonated N,N-Disubstituted Fatty Amides. Filed Feb. 26, 1973. PC $4/MF $1.45.

Patent application 337,792. Polymerized Rosin Product and Process for the Production of Same. Filed Mar. 5, 1973. PC $4/MF $1.45.

Patent application 342,133. Modification of Cotton Textiles and Cotton/Polyester Textile Blends by Photo-Initiated Polymerization of Vinylic Monomers. Filed Mar. 16, 1973. PC $4/MF $1.45.

Patent application 348,558. Cotton-Oxime, Cotton-Semicarbazone and Cotton-Hydantoin-Textile Products of High Nitrogen Content. Filed Apr. 6, 1973. PC $4/MF $1.45.

Patent application 348,802. N-Substituted Fatty Acid Amide Lubricants. Filed Apr. 6, 1973. PC $4.25/MF $1.45.

Patent application 351,935. Introduction of a Temporary Stiffness Into Knitted Cotton for Stability During Patterning. Filed Apr. 17, 1973. PC $4/MF $1.45.

Patent application 365,894. A Process for Dyeing Crosslinked Cellulosic Fabrics With Disperse Dyestuffs. Filed June 1, 1973. PC $4.25/MF $1.45.

Patent application 365,895. Process for Producing Fire Resistant Organic Textile Materials. Filed June 1, 1973. PC $4/MF $1.45.

Patent application 365,896. Flame Retardant Organic Fibrous Materials. Filed June 1, 1973. PC $4/MF $1.45.

Patent application 374,584. 3,7-Dicyano-3,5,7-Triaza-1-Phosphabicyclo(3.3.1)Nonane and Derivatives. Filed June 28, 1973. PC $4/MF $1.45.

Patent application 374,585. Processes to Make Olive Drab to Greenish-Gold Mineral Dye Shades for Cellulosics. Filed June 28, 1973. PC $4/MF $1.45.

Patent application 386,922. Hammer Mill With Integral Subsampling Portion. Filed Aug. 9, 1973. PC $4/MF $1.45.

Patent application 391,188. Process for Producing Varicolored Fabrics via the Selective Dyeing of Celluiosic Fabrics With Different Dye Types. Filed Aug. 24, 1973. PC $4/MF $1.45.

Patent application 400,079. Epithioamides as Plasticizer-Stabilizers. Filed Sept. 24, 1973. PC $4/MF $1.45.

Patent 3,681,099. Glossy Finish Linseed Water Emulsion Paints and Nonagglomerated Pigment Composition for Said Paints. Filed Aug. 4, 1970. Patented Aug. 1, 1972. Not available NTIS.

Patent 3,691,158. Hexachlorocyclopentadiene Adducts of Unsaturated Amides of Azabicyclononane. Filed Dec. 16, 1971. Patented Sept. 12, 1972. Not available NTIS.

Patent 3,696,600. Apparatus for Producing Core Yarn. Filed Apr. 12, 1971. Patented Oct. 10, 1972. Not available NTIS.

Patent 3,702,338. Hydroxy-Methylated Derivatives of Resin Acids, Their Use in Elastomeric Polyurethanes. Filed May 12, 1970. Patented Nov. 7, 1972. Not available NTIS.

Patent 3,702,359. Certain Microbial Insecticides and Methods of Preparation Thereof. Filed Oct. 30, 1970. Patented Nov. 7, 1972. Not available NTIS.

Patent 3,714,087. Powdered Resorcinol-Formaldehyde Treated Polysaccharide-Reinforced Elastomer Masterbatches, Compounds, and Resulting Vulcanized Rubbers. Filed Feb. 28, 1972. Patented Jan. 30, 1973. Not available NTIS.

Patent 3,729,379. Hydroxy-Conjugated Fatty Acids. Filed Aug. 31, 1971. Patented Apr. 24, 1973. Not available NTIS.

Patent 3,730,829. Starch Xanthate Derivatives Used in Papermaking. Filed Oct. 18, 1971. Patented May 1, 1973. Not available NTIS.

Patent 3,732,073. N,N-Diethylaziridinium Chloride as a Coreactant Catalyst for Reactions of N-Methylol Reagents With Cellulose. Filed Mar. 28, 1972. Patented May 8, 1973. Not available NTIS.

Patent 3,733,275. N-Substituted Fatty Acid Amide Lubricants. Filed Dec. 21, 1971. Patented May 15, 1973. Not available NTIS.

Patent 3,737,426. Biodegradeable Surfactants From Starch-Derived Glycosides. Filed Sept. 25, 1970. Patented June 5, 1973. Not available NTIS.

Patent 3,763,060. Starch Xanthate-Polyamide-Polyamine Interpolymer Paper Strength Additives. Filed June 9, 1972. Patented Oct. 2, 1973. Not available NTIS.

U.S. DEPARTMENT OF TRANSPORTATION
Patent Counsel, 300 7th St. SW.,
Washington, D.C. 20590

Patent application 449,327. An Airborne Laser Remote Sensing System for the Detection and Identification of Oil Spills. Filed Mar. 8, 1974. PC $4/MF $1.45.

Patent application 451,448. WEDCOM. Filed Mar. 15, 1974. PC $4/MF $1.45.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
National Institutes of Health, Chief, Patent Branch,
Westwood Building, Bethesda, Md. 20014

Patent application 326,145. Dialyzer Cartridge. Filed Jan. 23, 1973. PC $3/MF $1.45.

Patent 3,728,256. Crossflow Capillary Dialyzer. Filed June 22, 1971. Patented Apr. 17, 1973. Not available NTIS.

U.S. DEPARTMENT OF THE INTERIOR
Branch of Patents, 18th and C Sts. NW.,
Washington, D.C. 20240

Patent application 434,162. An optical Detection System. Filed Jan. 17, 1974. PC $4/MF $1.45.

Patent application 435,791. Method of Preparing Bipolar Membranes and the Production of Acids and Bases Therefrom. Filed Jan. 23, 1974. PC $4/MF $1.45.

Patent application 438,152. Method and Apparatus for Rapid Particle Size and Mass Analysis. Filed Jan. 29, 1974. PC $4/MF $1.45.

Patent application 446,833. Fluidized Bed in Reverse Osmosis Processes. Filed Feb. 28, 1974. PC $4/MF $1.45.

Patent 2,194,054. Apparatus for Concentrating Trace Impurities in High-Purity Helium. Filed Aug. 7, 1961. Patented July 13, 1965. Not available NTIS.

Patent 2,804,506. Dynamagnetic Pick-Up System. Filed Oct. 31, 1951. Patented Aug. 27, 1957. Not available NTIS.

Patent 2,813,823. Destructive Distillation of Hydrocarbonaceous Materials. Filed Sept. 19, 1956. Patented Nov. 19, 1957. Not available NTIS.

Patent 2,825,641. Method for Melting Refractory Metals for Casting Purposes. Filed Sept. 21, 1955. Patented Mar. 4, 1958. Not available NTIS.

Patent 2,860,101. Balanced Hydrogenation of Coal. Filed Apr. 20, 1953. Patented Nov. 11, 1958. Not available NTIS.

Patent 2,869,419. Orthophotoscope. Filed Aug. 28, 1956. Patented Jan. 20, 1959. Not available NTIS.

Patent 2,879,472. Dynamic Resistance Recorder. Filed Oct. 11, 1957. Patented Mar. 24, 1959. Not available NTIS.

Patent 2,890,111. Method of Manufacturing Titanium and Titanium Alloys. Filed Mar. 30, 1956. Patented June 9, 1959. Not available NTIS.

Patent 2,892,924. Electrode for Melting and Arc Welding Zirconium Metal. Filed Jan. 24, 1957. Patented June 30, 1959. Not available NTIS.

Patent 2,901,402. Process for Destructive Distillation of Hydrocarbonaceous Materials. Filed July 19, 1957. Patented Aug. 25, 1959. Not available NTIS.

Patent 2,934,443. Impact Resistant Ceramic Dielectric and Method of Making Same. Filed Oct. 10, 1957. Patented Apr. 26, 1960. Not available NTIS.

Patent 3,002,091. Method of Tracing the Flow of Liquids by Use of Post Radioactivation of Tracer Substances. Filed Nov. 3, 1958. Patented Sept. 26, 1961. Not available NTIS.

Patent 3,012,668. Electrostatic Separator Carrier Electrode. Filed Dec. 8, 1959. Patented Dec. 12, 1961. Not available NTIS.

Patent 3,223,319. Multiple Electrode Detector. Filed Nov. 18, 1964. Patented Dec. 14, 1965. Not available NTIS.

Patent 3,236,682. Process for Preparation of Caustic-Resistant Containers for High-Temperature Use. Filed Dec. 28, 1962. Patented Feb. 22, 1966. Not available NTIS.

Patent 3,238,098. Method of Controlling Sea Lamprey. Filed Jan. 27, 1964. Patented Mar. 1, 1966. Not available NTIS.

Patent 3,244,612. Demineralization Electrodes and Fabrication Techniques Therefor. Filed Nov. 29, 1961. Patented Apr. 5, 1966. Not available NTIS.

Patent 3,254,202. Automatic Swing Curve Calculator and Plotter Used to Indicate Transient Stability of Power Generators. Filed Nov. 2, 1962. Patented May 31, 1966. Not available NTIS.

Patent 3,257,992. Coal Burning Water Tube Steam Generator Construction Embodying Integral Primary Coal Slagging Type Furnace and Secondary Furnace. Filed May 28, 1964. Patented June 28, 1966. Not available NTIS.

Patent 3,259,762. Electrostatic Induction Power Supply. Filed Apr. 16, 1963. Patented July 5, 1966. Not available NTIS.

Patent 3,260,658. Process for the Recovery of Rhenium. Filed Oct. 31, 1962. Patented July 12, 1966. Not available NTIS.

Patent 3,264,957. Binder and Surface Coating Made From Coal and Asphalt. Filed Jan. 18, 1963. Patented Aug. 9, 1966. Not available NTIS.

Patent 3,273,993. Process of Reduction Roasting of Iron Ore With Metallic Iron. Filed Jan. 30, 1964. Patented Sept. 20, 1966. Not available NTIS.

Patent 3,273,995. Recovery of Zinc From Zinc Die-Cast Scrap. Filed May 22, 1964. Patented Sept. 20, 1966. Not available NTIS.

Patent 3,794,574. Device for Cathodically Protecting Metal Conduit System. Filed Apr. 27, 1972. Patented Feb. 26, 1974. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters, NASA—
Code GP–2, Washington, D.C. 20546

Patent 3,752,556. Real Time Moving Scene Holographic Camera System. Patented Aug. 14, 1973. Not available NTIS.

Patent 3,784,499. Nonflammable Coating Compositions. Patented Jan. 8, 1974. Not available NTIS.

[FR Doc. 74–10511 ; Filed 5–7–74 ; 8 : 45 am]

DEPARTMENT OF THE AIR FORCE
AF/JACP, Washington, D.C. 20314

Patent application 271,335. Cover Support Assembly. Filed July 13, 1972. PC $4/MF $1.45.

Patent application 278,853. Method of and Apparatus for Forming Grooves and Coolant Channels in and for Rocket Engine Composite Channel-Type Coolant Wall Having a Complex Surface. Filed Aug. 8, 1972. PC $4/MF $1.45.

Patent application 279,416. Breathing Mask Assembly. Filed Aug. 10, 1972. PC $4/MF $1.45.

Patent application 284,552. Preparation of Ultrahigh Purity Anhydrous Alkali Metal Halide Powders. Filed Aug. 29, 1972. PC $4/MF $1.45.

Patent application 287,188. Unbonded Flexure Seal Design. Filed May 7, 1972. PC $4/MF $1.45.

Patent application 288,818. Releasable Connector Subassembly. Filed Sept. 13, 1972. PC $4/MF $1.45.

Patent application 289,694. Temperature Cycling Device. Filed Sept. 15, 1972. PC $4/MF $1.45.

Patent application 289,695. Method of Connecting a Metal Conduit to a Plastic Conduit. Filed Sept. 15, 1972. PC $4/MF $1.45.

Patent application 292,368. Thermally Stable Phenylated Heterocyclic Aromatic Polymers and Method of Synthesis. Filed Sept. 26, 1972. PC $4/MF $1.45.

Patent application 297,123. Process for Preparing Carrot Juice. Filed Oct. 12, 1972. PC $4/MF $1.45.

U.S. DEPARTMENT OF AGRICULTURE

Chief, Research Agreements and Patent Mgmt. Branch
Federal Building, General Services Division,
Agricultural Research Service,
Hyattsville, Md. 20782

Patent application 348,840. Method for Improving the Shelf Life of Roasted Peanuts. Filed Apr. 6, 1973. PC $4/MF $1.45.

Patent application 374,731. Whey Solids as a Stabilizer for Agricultural Foams. Filed June 28, 1973. PC $4/MF $1.45.

Patent application 288,812. N-Cyclohexyl-N-2-Acetoxyethyl-Oleamide. Filed Sept. 13, 1972. PC $5/MF $1.45.

Patent application 328,199. Shrinkage-Control Treatment for Knitted Fabrics. Filed Jan. 31, 1973. PC $4/MF $1.45.

Patent application 337,791. Use of Epoxides in the Preparation of Higher Fatty Acid Anhydrides. Filed Mar. 5, 1973. PC $4/MF $1.45.

Patent application 360,281. Azeotropic Solvents for Permanent Press Treatments of Cotton and Cotton Blend Fabrics. Filed May 14, 1973. PC $4/MF $1.45.

Patent application 365,897. Process for Preparing Frosted and Multicolored Cotton Pile Fabrics. Filed June 1, 1973. PC $4/MF $1.45.

Patent application 391,189. A Monophosphorus Analog of Hexamethylenetetramine and Derivatives. Filed Aug. 24, 1973. PC $4/MF $1.45.

Patent 3,674,880. Methods for Preparing Valuable Keto and Hydroxy Cyclic Compounds. Filed Jan. 3, 1968. Patented July 4, 1972. Not available NTIS.

Patent 3,709,005. Vapor-Phase Reaction Apparatus for Treating Cellulosic Textile Materials and Garments. Filed Jan. 26, 1971. Patented Jan. 9, 1973. Not available NTIS.

Patent 3,729,461. Synthesis of Glycosyl Glycerides. Filed Dec. 23, 1970. Patented Apr. 24, 1973. Not available NTIS.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

National Institutes of Health, Chief, Patent Branch,
Westwood Building, Bethesda, Md. 20014

Patent application 381,234. Thumbtack Microelectrode and Method of Making Same. Filed July 20, 1973. PC $4/MF $1.45.

Patent 3,746,683. Thromboresistant Articles Made From Polyurethanes Containing a Polypropylene Glycol-Ethylene Oxide Block Copolymer. Filed Dec. 24, 1970. Patented July 17, 1973. Not available NTIS.

Patent 3,785,832. Dental Primer Varnish. Filed Oct. 13, 1971. Patented Jan. 15, 1974. Not available NTIS.

U.S. DEPARTMENT OF THE INTERIOR

Branch of Patents, 18th and C Sts. NW.,
Washington, D.C. 20240

Patent 2,789,888. Apparatus for Performing the Fischer-Tropsch Reaction. Filed Mar. 3, 1953. Patented Apr. 23, 1957. Not available NTIS.

Patent 2,829,061. Machinable Ceramic Bonded Material and Method for Producing Same. Filed Sept. 24, 1952. Patented Apr. 1, 1958. Not available NTIS.

Patent 2,947,688. Process and Apparatus for the Demineralization of Saline Water. Filed Jan. 10, 1957. Patented Aug. 2, 1960. Not available NTIS.

Patent 2,996,439. Rotary Still. Filed Dec. 16, 1958. Patented Aug. 15, 1961. Not available NTIS.

Patent 3,002,002. Reduction of the Thiophene Nucleus. Filed Apr. 2, 1957. Patented Sept. 26, 1961. Not available NTIS.

Patent 3,010,208. Method for Determining the Authenticity of Ancient Artifacts Made of Obsidian. Filed May 6, 1960. Patented Nov. 28, 1961. Not available NTIS.

Patent 3,116,450. Tracer Liquid Release Tube Having Franibige Elements at Opposite Ends of the Tube. Filed Aug. 25, 1961. Patented Dec. 31, 1963. Not available NTIS.

Patent 3,117,586. Automatic Controller. Filed June 30, 1961. Patented Jan. 14, 1964. Not available NTIS.

Patent 3,137,648. Pretreatment of Minerals for Electrostatic Separation. Filed Jan. 24, 1962. Patented June 16, 1964. Not available NTIS.

Patent 3,150,923. Process for Removing Sulfur Dioxide From Gases. Filed Jan. 18, 1962. Patented Sept. 29, 1964. Not available NTIS.

Patent 3,154,381. Progressive Melting and Crystallization of Synthetic Mica. Filed Apr. 20, 1959. Patented Oct. 27, 1964. Not available NTIS.

Patent 3,184,302. Process, Removal of Oxygen and Aluminum From Metals Prepared by Aluminothermic and Similar Processes. Filed Jan. 24, 1963. Patented May 18, 1965. Not available NTIS.

Patent 3,184,789. Apparatus for Large-Scale Application of Monomolecular Layers to Water Surfaces Using Melted Material. Filed Apr. 7, 1964. Patented May 25, 1965. Not available NTIS.

Patent 3,228,750. Process for Separating Rare-Earth Elements by Ion Exchange. Filed June 7, 1962. Patented Jan. 11, 1966. Not available NTIS.

Patent 3,250,701. Stabilization of Desalination Membranes. Filed Sept. 15, 1965. Patented May 10, 1966. Not available NTIS.

Patent 3,262,865. Chemical Treatment and Distillation of Sea Water. Filed July 15, 1963. Patented July 26, 1966. Not available NTIS.

Patent 3,271,246. Method of Controlling Sea Lamprey. Filed Jan. 6, 1964. Patented Sept. 6, 1966. Not available NTIS.

Patent 3,271,326. Flame Spraying of Catalytically Active Pulverized Metal Oxides on Supports. Filed July 22, 1963. Patented Sept. 6, 1966. Not available NTIS.

Patent 3,278,028. Flotation of Mica. Filed Oct. 31, 1963. Patented Oct. 11, 1966. Not available NTIS.

Patent 3,282,678. Smelting Reduced Iron Ore Pellets in the Blast Furnace. Filed Jan. 16, 1964. Patented Nov. 1, 1966. Not available NTIS.

Patent 3,292,780. Process for Improved Flotation Treatment of Iron Ores by Selective Flocculation. Filed May 4, 1964. Patented Dec. 20, 1966. Not available NTIS.

Patent 3,293,829. Top Closure for High Temperature Electrostatic Precipitator. Filed Aug. 27, 1963. Patented Dec. 27, 1966. Not available NTIS.

Patent 3,341,256. Process for Conveying Mineral Solids Through Conduits. Filed May 24, 1963. Patented Sept. 12, 1967. Not available NTIS.

Patent 3,369,168. Frequency Conversion System Utilizing Modulation. Filed Aug. 5, 1966. Patented Feb. 13, 1968. Not available NTIS.

Patent 3,465,235. Control of Rotating Exciters for Power System Damping. Filed Oct. 16, 1967. Patented Sept. 2, 1969. Not available NTIS.

Patent 3,552,754. Tube Plate Seal. Filed Sept. 15, 1969. Patented Jan. 5, 1971. Not available NTIS.

Patent 3,788,465. Device and Process for Magneto-Gravimetric Particles Separation Using Non-Vertical Separation Process. Filed Apr. 20, 1972. Patented Jan. 29, 1974. Not available NTIS.

[FR Doc. 74-10512; Filed 5-7-74; 8:45 am]

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF MAY 11, 1974

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	5-07-73
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	2-12-73
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	4-24-73
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	6-01-73
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	3-01-73
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	10-03-73
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	1-11-73
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	7-02-73
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	2-14-73
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	5-09-73
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	5-15-72
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	9-10-73
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	5-07-73
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—Director (Vacant). Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	5-09-73
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	8-08-73
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—Director (Vacant). Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	4-09-73

Expiration of patents: The patents within the range of numbers indicated below expire during May 1974, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,790,971 to 2,794,185, inclusive
Plant Patents..... Numbers 1,598 to 1,608, inclusive

REISSUES

MAY 28, 1974

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

28,019

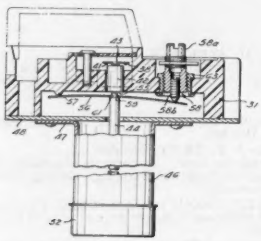
ADJUSTABLE THERMOSTAT

Donald J. Schmitt, Mansfield, Ohio, assignor to Therm-O-Disc, Incorporated, Mansfield, Ohio

Original No. 3,573,700, dated Apr. 6, 1971, Ser. No. 779,680, Nov. 29, 1968. Application for reissue June 26, 1972, Ser. No. 266,446

Int. Cl. H01h *37/18, 37/24, 37/54*

U.S. Cl. 337—347 **37 Claims**



Bimetal free disc thermostats are disclosed which provide means for modifying the operating temperature of the disc and means for modifying the operating temperature differential of the disc. The operating temperature of the thermostat is adjusted by applying an adjustable biasing force to the snap disc urging it toward one position of stability. Adjustment of the force changes the temperature of operation without materially altering the displacement characteristics of the disc or the operating differential. The stability of the disc calibration is also improved by the biasing force which dampens the snap action. Operating temperature differential is adjusted by a biasing force applied to the disc only when the switch contacts are open. This latter force causes the disc to operate along one curve when the switch is closed and a displaced curve when the switch is open, thereby adjustably reducing operating temperature differential of the disc. A switch operator is arranged so that the kinetic energy of a mass in motion is available to break any contact welds. Further conventional disc structures may be arranged to operate at higher temperatures with relatively small operating temperature differentials by applying properly selected biasing forces to such conventional discs.

28,020

KILN DRYING PROCESS

Dallas S. Dedrick, Longview, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

No Drawing. Original No. 3,404,464, dated Oct. 8, 1968, Ser. No. 602,502, Dec. 19, 1966. Application for reissue Sept. 2, 1970, Ser. No. 69,117

Int. Cl. F26b *3/00*

U.S. Cl. 34—30 **27 Claims**

A process for drying wood wherein heat energy is supplied to a load of wood in a confined zone by means of heated air whose temperature is constantly increased with respect to time. Additionally the process preferably utilizes circulating air to dry the wood, the air circulated in one direction across the wood under conditions of laminar flow.

28,021

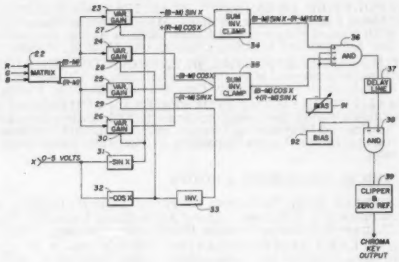
CHROMA KEY CIRCUIT

Peter Boxman, Clifton, and Frederik Johannes van Roessel, Mahwah, N.J., assignors to Philips Broadcast Equipment Corporation, Montvale, N.J.

Original No. 3,678,182, dated July 18, 1972, Ser. No. 123,690, Mar. 12, 1971. Application for reissue Sept. 13, 1972, Ser. No. 288,567

Int. Cl. H04n *9/02*

U.S. Cl. 178—5.4 R **12 Claims**



A circuit for generating an output pulse upon the occurrence of a selected color in color television signals features a matrix to form two chrominance difference signals. Four variable gain amplifiers multiply the difference signals by the sine and cosine of a control voltage which is a course color control. Two circuits each comprising a summer, inverter, and clamp circuit each add the outputs of two of the multiplied signals. An AND gate combines the output of the summer circuits and also is coupled to a variable bias supply, which is a fine color control. A delay line, a second AND gate, and a clipper and zero reference then shape the output pulse.

28,022

COMBINED FLOOR POLISHER AND SUCTION CLEANER

George L. Lamont, Hurlstone Park, New South Wales, Australia, assignor to Contract Cleaning Co. Pty. Limited, Leichhardt, New South Wales, Australia

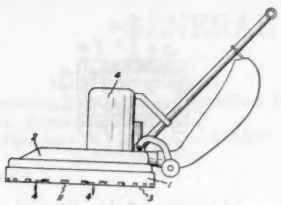
Original No. 3,531,819, dated Oct. 6, 1970, Ser. No. 700,065, Jan. 24, 1968. Application for reissue Sept. 21, 1972, Ser. No. 290,810

Int. Cl. A47l *5/10*

U.S. Cl. 15—385 **14 Claims**

A combined floor polisher and suction cleaner comprising, in combination, a housing with a rotary brush

therein and a suction means within the housing adjacent the brush. A flexible floor contacting skirt depends from



the entire periphery of the housing and has therein a plurality of openings through which large pieces of liter may be drawn.

28,023

ROTARY DOUCHE FOR TREATING BREASTS

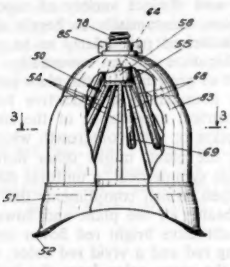
Jacques Marcel Courtin, 35 Rue Tronchet, 75008 Paris, France

Original No. 3,667,455, dated June 6, 1972, Ser. No. 29,607, Apr. 17, 1970. Application for reissue Sept. 15, 1972, Ser. No. 289,217

Claims priority, application France, July 29, 1969, 6925877

Int. Cl. A61h *9/00*

U.S. Cl. 128—66 3 Claims



A rotary douche for treating breasts which is used with a water supply and which comprises three major component parts: a bell-shaped body, a stator and a rotor which are easily assembled and disassembled in order to facilitate the removal of deposits from the water supply such as calcium. The stator includes an extending lip for sealingly engaging the chest of the user. The stator is adapted to support the rotor for rotation thereon and includes a tubular portion extending through a portion of the bell-shaped body remote from the open end and adapted to be connected to a water supply. Ports are provided in the tubular member for conducting the water to the rotor. The rotor includes fingers having orifices at their tips so that the rotor is driven by reaction.

28,024

PROCESS FOR THE STERILIZATION OF SOLID SURFACES

Alexander Knetemann, deceased, late of Voorburg, Netherlands, by Marie Knetemann, nee Groeneveld, Voorburg, Hubertus Leonardus Maria Lelieveld, Vlaardingen, Renee van Rhee, Maassluis, and Gerald Tuynenburg Muys, Rotterdam, Netherlands, assignors to Lever Brothers Company, New York, N.Y.

No Drawing. Original No. 3,576,594, dated Apr. 27, 1971, Ser. No. 747,078, July 24, 1968. Application for reissue Apr. 23, 1973, Ser. No. 353,917

Claims priority, application Great Britain, July 31, 1967, 35,123/67

Int. Cl. A61l *13/00*

U.S. Cl. 21—57 5 Claims

The sterilisation of solid surfaces, such as the interior of food containers, is achieved by hydrogen chloride gas at temperatures below 40° C. in a manner such that there is no residual hydrochloric acid on the sterilised surface, control of the interrelated factors of temperature, duration of contact, and water-vapor, hydrogen chloride content being employed.

28,025

AUTOMATIC CONTROL DEVICE FOR ELECTRONIC FLASH

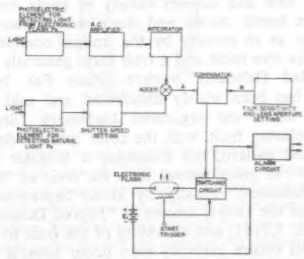
Tomoji Murata, 2306 Kanaoka-chou, Sakai, Osaka, Japan, and Sadao Yamaoka, 33–2 Nakanogawa-chou, Toyokawa, Aichi, Japan

Original No. 3,591,829, dated July 6, 1971, Ser. No. 722,287, Apr. 18, 1968. Application for reissue Apr. 11, 1972, Ser. No. 243,095

Claims priority, application Japan, Apr. 20, 1967, 42/25,351; June 27, 1967, 42/41,126; Aug. 7, 1967, 42/50,649; Aug. 21, 1967, 42/53,637

Int. Cl. H01j *39/12;* H05b *41/36*

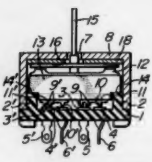
U.S. Cl. 315—151 19 Claims



A device for automatic control of the quantity of light from an electronic flash, by comparing the brightness of a photographic object with the quantity of light required for particular photographing conditions including the degree of lens aperture selected and the sensitivity of the film used. The brightness of the photographic object is measured as the sum of the natural light brightness and the brightness due to electronic flash, and as soon as the sum brightness thus measured reaches the required quantity of light, a stop signal is given. Thereby, the electronic flash is controlled, and at the same time signal is given for the sufficient brightness of the photographic object.

28,026
SLIDING-TYPE VARIABLE RESISTOR
Shunzo Oka, Hirakata, Japan, assignor to Matsushita Electric Industrial Company, Ltd., Osaka, Japan
Original No. 3,639,880, dated Feb. 1, 1972, Ser. No. 73,012, Sept. 17, 1970. Application for reissue Oct. 3, 1972, Ser. No. 294,506
Claims priority, application Japan, Sept. 27, 1969, 44/92,322, 44/92,323; June 5, 1970, 45/55,883; June 12, 1970, 45/58,704
Int. Cl. H01c 9/02
U.S. Cl. 338—183 7 Claims

A sliding-type variable resistor comprising a baseplate with resistance elements and conductive elements disposed on the upper side thereof; a sliding block with contactors disposed on the lower side thereof and with a plate spring and an operating means provided on the upper side thereof, the contactors being maintained in contact with the resistance elements and the conductive elements; a housing which covers the baseplate in such a manner as to contain therein the sliding block; an operating means having a thumb fitting attached to the sliding block and being projected through the slot on the upper side of the housing; and a friction plate disposed on the upper surface of the sliding block and pressed against the ceiling



of the housing by means of the plate spring, a gaseous grease layer being interposed between the ceiling of the ceiling of the housing and the friction plate so that a smooth sliding operation may be assured.

PLANT PATENTS

GRANTED MAY 28, 1974

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,556
APPLE TREE
Arlie M. Ward, Wenatchee, Wash., assignor to Van Well Nursery, Inc., Wenatchee, Wash.
Filed Dec. 26, 1972, Ser. No. 318,101
Int. Cl. A01h 5/03
U.S. Cl. Plt.—35 1 Claim

A delicious apple tree with fruit that colors earlier and darker red than that of its parent, Brauns, Plant Pat. No. 1,411.

3,557
APPLE TREE
Russell N. Flanagan, Thurmont, Md., assignor to Stark Bro's Nurseries & Orchards Company, Louisiana, Mo.
Filed Jan. 8, 1973, Ser. No. 321,914
Int. Cl. A01h 5/03
U.S. Cl. Plt.—35 1 Claim

1. A new and distinct variety of apple tree, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a spur type tree habit and a fruit form generally resembling the "Red Delicious" variety (Plant Pat. No. 1,565), which has been widely distributed and sold by my assignee under the registered trademark "Starkrimson," early-coloring fruit, with the color initially developing in a striped pattern, but becoming a brighter and lighter over-all red color sooner than the fruit of "Starkrimson Red Delicious," usually by about September first and ahead of the variety known as "Topred Delicious" (Plant Pat. No. 1,916), and an ability of the fruit to color early and well before maturity even under adverse conditions.

3,558
APPLE TREE
Robert E. Holdren, Little Hocking, Ohio 45742
Filed Jan. 15, 1973, Ser. No. 323,805
Int. Cl. A01h 5/03
U.S. Cl. Plt.—34 1 Claim

1. A new and distinct variety of apple tree, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a vigorous, hardy, upright, medium tall and dense habit of growth, with strong and well-crotched limbs, an early and regular fruit-bearing habit, with the fruit reaching full color and maturity about August first in Ohio (about three weeks earlier than the fruit of "Wealthy" which it generally resembles), a distinctive and attractive bright red and waxy fruit color with a greenish scarfskin, crisp, juicy, slightly tart fruit flesh which makes the fruit excellent for both eating and cooking, and a fruit firmness comparable to that of "Rome Beauty," with consequent good keeping, handling and shipping qualities.

3,559
ROSE PLANT
Herbert C. Swim and O. L. Weeks, Ontario, Calif., assignors to O. L. Weeks, doing business as Weeks Wholesale Rose Grower, Ontario, Calif.
Filed Feb. 12, 1973, Ser. No. 331,513
Int. Cl. A01h 5/00
U.S. Cl. Plt.—28 1 Claim

1. A new and distinct variety of rose plant of the floribunda class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of an unusually compact and vigorous habit of growth, with the plant being completely clothed with abundant and attractive foliage, a completely symmetrical appearance of the blooms and the absence of spikes or other outgrowth which disturbs the symmetry of the plant, unlike other floribundas which are usually less symmetrical, a uniform flower size when the flowers open, which compliments the symmetry and adds to the beauty of the plant and flowers, and a distinctive and attractive bright red flower color falling between a strong red and a vivid red color, which remains substantially the same color from the bud stage to the open flower stage.

3,560
APPLE TREE
Daniel A. Hanners, Hood River, Oreg., assignor to Stark Bro's Nurseries & Orchards Co., Louisiana, Mo.
Filed Mar. 8, 1973, Ser. No. 339,355
Int. Cl. A01h 5/03
U.S. Cl. Plt.—35 1 Claim

1. A new and distinct variety of apple tree, substantially as herein shown and described, characterized particularly as to novelty by its resemblance in all respects except fruit color to the variety known as "Stark Jumbo," but differing from the latter by a bright solid red blush on almost all of the surface of each fruit, as compared with the typical yellowish green ground color having red stripes extending over only half of the fruit surface of the fruit of "Stark Jumbo."

PATENTS

GRANTED MAY 28, 1974

GENERAL AND MECHANICAL

3,812,539
SLEEPING GARMENT

John R. Muehlberg, and Harriet W. Muehlberg, both of 137 Parker Ave., Elkhart, Ind. 46514

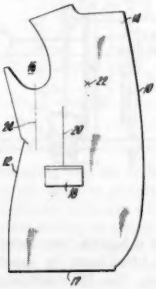
Filed June 29, 1973, Ser. No. 375,057
Int. Cl. A41d 9/00
U.S. Cl. 2—69.5 9 Claims

A sleeping garment of the nightgown type having a body with an open lower end and being sufficiently long to extend below the feet of the wearer, in which a hem is disposed around the bottom of the body with a channel therein for a drawstring for closing the bottom of the garment to enclose the feet of the wearer. A means is provided for holding the bottom of the garment above the feet when the wearer is standing and walking. The means may consist of a loop along the side of the garment for receiving the ends of the drawstring or may be a second drawstring adapted to pull the lower end of the garment upwardly when the first drawstring is untied.

3,812,540
FORM FITTING COAT CONSTRUCTION

Ralph R. Pagano, 118 87 St., Brooklyn, N.Y. 11209

Filed Sept. 11, 1972, Ser. No. 287,617
Int. Cl. A41d 1/02, 27/10
U.S. Cl. 2—93 7 Claims

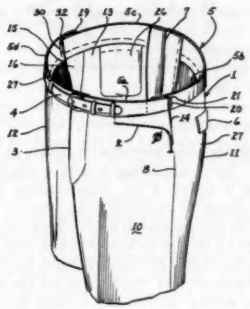


An improved form fitting coat construction is herein described having two front panels with interliners secured to the insides thereof and having sleeves of a unique construction. Each front panel is formed with a single dart extending generally vertically, midway between an apex point and an anatomical side line of the panel. The dart extends downwardly from a point, beneath the level of the armhole, to a side pocket formed in the front panel. Preferably the dart is formed by merely sewing the material, without slashing. The interliner includes a major layer of material having a rear edge which crosses over the single dart at the approximate midpoint thereof. Each sleeve is of a unitary, single piece construction and may include two elongated sections which terminate at a jacket-connecting end with a generally circular sleeve cap extending from the end of one section and a generally circular cutout being formed in the second section adjacent the sleeve cap.

3,812,541
EXPANDABLE WAISTBAND FOR TROUSERS

Phillip G. Stuart, 7920 W. Glendale Ave., Space No. 9, Phoenix, Ariz. 85303

Filed June 21, 1973, Ser. No. 372,396
Int. Cl. A41d 1/06
U.S. Cl. 2—237 10 Claims



A pair of trousers being partially slit along each side seam and incorporating an expandable waistband is disclosed. Each of the front panels is secured to the corresponding rear panels of the pair of trousers by a pair of independent elastic straps. An overlapping flap extending forwardly from each rear panel, extends across the slit and overlaps the rear edge of the corresponding front panel. Each pair of elastic straps retains the rear panel and flap adjacent the corresponding front panel to prevent longitudinal separation therebetween and also provides support for both front and rear panels to maintain them laterally adjacent one another and the wearer.

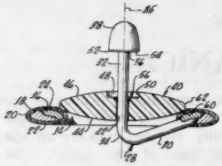
3,812,542
CENTER POST HEART VALVE

Donald P. Shiley, 11022 Huntinghorn, Santa Ana, Calif. 92705

Filed Oct. 10, 1972, Ser. No. 296,289
Int. Cl. A61f 1/22
U.S. Cl. 3—1 10 Claims

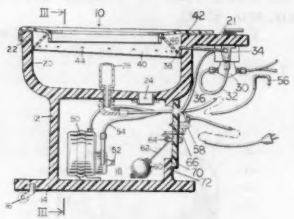
A prosthetic heart valve has a single center post to guide a movable disc seated on a circular valve ring, that defines an orifice and supports the post. The extremity of the opening movement of the disc is limited by a stop knob attached to the

center post. A central recess in the face of the disc engaging the stop hydraulically cushions the stopping of the disc. In



another arrangement, the disc is formed with an enlarged central chamber which provides a dampening action of the disc in combination with the post.

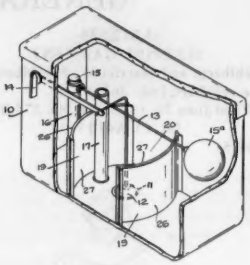
3,812,543
MOVABLE BIDET
Ralph G. Stinson, 1136 Warden St., Fort Worth, Tex. 76126
Filed Apr. 11, 1973, Ser. No. 350,147
Int. Cl. A47k *3/22, 11/08*
U.S. Cl. 4—7 **16 Claims**

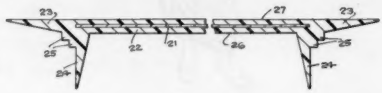


A self-supporting bidet movable on rollers or the like, and having flexible lines connecting it with a water supply; the bidet also has a reservoir for accumulating waste liquids therein, and a pump for evacuating the reservoir into a water closet or other sewer-connected fixture. Flexible tubing is provided to connect a mixing valve to hot and cold water supply lines, and also to connect the pump exhaust to existing plumbing fixtures. Preferably, an on-off valve for the water is independent of the mixing valve so that turning the water on and off will not inadvertently affect a desired temperature setting for the water supply. Means are also provided to selectively divert at least some of the supply water through a continuous cavity in the bidet's seat, for warming the seat. Apertures in the continuous cavity provide communication with the bowl to produce a type of rim rinse. One embodiment utilizes a stand made of light-weight material so that the bidet may be fairly easily moved about in a bathroom without the need for rollers or casters.

3,812,544
FLUSH TANK WATER SAVER
James A. Risley, 224 N. Harrison Ave., Beverly, N.J. 08010
Filed July 23, 1973, Ser. No. 382,687
Int. Cl. E03d *1/20, 1/22, 1/30*
U.S. Cl. 4—18 **11 Claims**

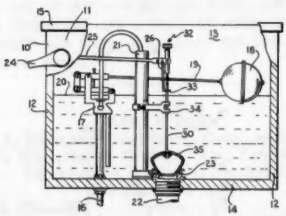
A water-saving system designed for installation in an existing water closet tank of a conventional toilet which employs a pair of weir-like baffle members disposed to either side of the flush valve of the tank to provide therein a water-tight well through which only the water contained in the well together with the water in the tank above the top level of the well is discharged into the toilet upon each flushing operation thereof. The tank water surrounding the well below the top level thereof, which is retained in the tank, constitutes the water saved, which saved water, after each flushing operation, is then supplemented with a fresh supply of only so much water above the top level of the well as is required for producing the hydrostatic head necessary for each flushing operation of the toilet.





The baffle members which dam up a substantial volume of the water contained in the bottom portion of water tank are each provided with flexible gasket flanges extending along the bottom and opposite side edges thereof which serve to provide not only water-tight sealing engagement with the tank but also good frictional engagement therewith for securely holding the members in fixed positions.

3,812,545
ADJUSTABLE TOILET TANK FLUSH VALVE
John H. Lanahan, Whitesboro, N.Y., assignor to Dyna Logics, Inc., New Hartford, Conn.
Filed July 17, 1972, Ser. No. 272,363
Int. Cl. E03d *1/34, 5/02, 5/10*
U.S. Cl. 4—67 A **1 Claim**



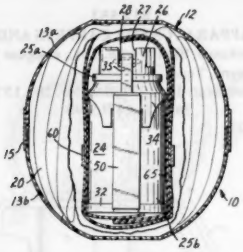
A flush valve has a hollow float valve open at the bottom and adapted to be lifted from its annular seat to discharge water from the tank. The lift mechanism includes a guided vertical tube secured to the float valve and carrying an adjustable air escape valve at its upper end, the tube connecting the interior of the float valve with the air escape valve.

3,812,546

SELF-INFLATABLE LIFE PRESERVER APPARATUS

John R. Witte, P.O. Box 293, Homer, Minn. 55942

Filed June 12, 1972, Ser. No. 261,650
Int. Cl. B63c 9/18
U.S. Cl. 9—319 7 Claims



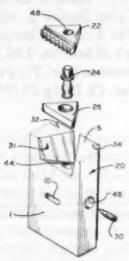
A self-inflatable life preserver including an inflatable annular tube which is stored in a deflated condition within a generally spherical shell suitable for throwing by hand over considerable distances. A pressurized fluid container is positioned within the inflatable tube and is actuated by a trigger mechanism biased toward a first position allowing the pressurized fluid to fill the annular tube; the trigger mechanism being normally held in a second position by a liquid deteriorable strap wrapped about the exterior of the tube. The spherical shell is provided with a number of holes for allowing a liquid (e.g. water) to pass into the shell upon the occurrence of which the strap deteriorates allowing the valve actuator to move to its first position inflating the deflated tube causing the spherical shell to split apart and separate from the inflated preserver.

3,812,547

TOOLHOLDER WITH INTERCHANGEABLE INSERTS FOR A TANGENT CHASER

James F. Reich, 1010 Pinewood Dr., Pine City, N.Y. 14871

Filed Feb. 23, 1973, Ser. No. 335,262
Int. Cl. B23g 1/00, 5/00
U.S. Cl. 10—101 1 Claim



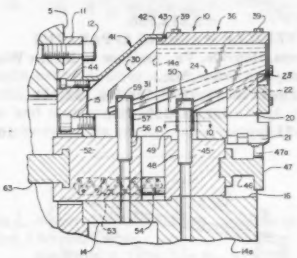
Interchangeable threading dies for an automatic self opening tangent threading die head to permit a greater range of thread pitches and diameters to be cut with a single die head. It consists of a toolholder having an effective inclined V-block mount for a complementary triangular thread cutting tool wherein the cutting forces are exerted in a direction to wedge the tool tightly against the aligning surfaces in the three freedoms of movement to compel accurate positioning of the cutting tool with respect to the holder independent of the clamping means.

3,812,548

TOOL HEAD WITH DIFFERENTIAL MOTION RECEDE MECHANISM

Fred Theuerkaue, Naples, Fla., assignor to The Pipe Machining Company, Wickliffe, Ohio

Filed Dec. 14, 1972, Ser. No. 315,113
Int. Cl. B23g 1/26, 5/04
U.S. Cl. 10—120.5 R 5 Claims



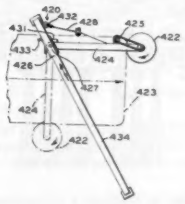
A rotary die head for threading pipe is moved axially toward and away from the end of a coaxial pipe during rotation of the head. Circumferentially spaced die carriers are mounted in the head for reciprocation radially thereof. During rotation and advance of the head, the carriers apply dies to the pipe, and a common drive element advancing the head is engaged and held by the end of the pipe so that the head is moved axially relative thereto during advance of the head. The drive element drives novel differential motion devices, arranged one for each carrier. Each differential motion device recedes its carrier, from a radial starting position during the advance. A common power driven collapse and reset mechanism is mounted in the head and is drivingly connected to the differential motion devices and is operated by the common drive element to (a) collapse the carriers radially for disengaging their dies from the pipe at the end of the advance of the head; (b) to maintain the carriers in collapsed position during retraction of the head, and (c), before the next advance of the head to starting position, to reset the carriers in the radial starting position for the next threading cut. Precision in recede is enhanced by the differential motion provided by the devices. All of the operating parts for effecting those operations are contained in a compact head which is relatively short axially and which can be used on a conventional rotary spindle machine in which the relative advance of the head is by acvancing the head toward a stationary pipe or advancing the pipe towrd the head.

3,812,549

WRAPAROUND BRUSHING DEVICE

Daniel C. Hanna, 1133 River Dr., Portland, Oreg. 97227

Continuation of Ser. No. 218,409, Jan. 17, 1972. This application Aug. 10, 1972, Ser. No. 279,435
Int. Cl. B60s 3/06
U.S. Cl. 15—21 D 7 Claims



A wraparound brushing device 20 (FIGS. 1–4) has a linkage carrying a brush and urged toward a normal position by a

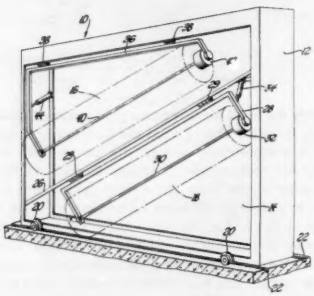
spring and a counterweight. A top brushing device **120** (FIGS. **5** and **6**) includes a pair of linkages at each side which fold as the brush rolls over the top of a car and then unfold to cause the brush to follow the rear surfaces of the car. Wraparound brushing devices **220** (FIG. **7**), **320** (FIG. **8**), **420** (FIG. **9**) and **520** (FIG. **10**) are moved around moving cars solely by the action of rotating brushes and constantly operative biasing means.

3,812,550

VEHICLE WASHING APPARATUS

David J. Bivens, Danville, Va., assignor to Bivens Winchester Corporation, Ann Arbor, Mich.

Filed Feb. 16, 1973, Ser. No. 333,441
Int. Cl. B60s *3/06*
U.S. Cl. 15—21 E **10 Claims**



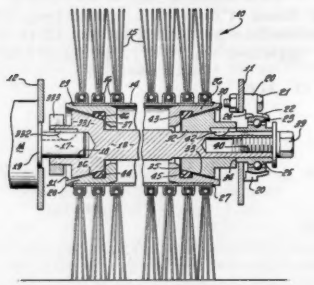
A side brush apparatus for washing tall vehicles including a longitudinally displaceable carriage and a pair of independently pivotal cylindrical brushes mounted on the carriage with the axes thereof in spaced, staggered, parallel relationship and inclined from the vertical at an angle of 45° to present a maximum swept washing area for an angled brush at minimum effective longitudinal length.

3,812,551

STREET SWEEPER BROOM DRIVE

Donald G. Mortensen, Upland, Calif., assignor to Wayne Manufacturing Company, Pamona, Calif.

Division of Ser. No. 183,984, Sept. 27, 1971, Pat. No. 3,726,109. This application Oct. 26, 1972, Ser. No. 301,184
Int. Cl. A46b *13/02*; **F16b** *7/02*
U.S. Cl. 15—179 **17 Claims**



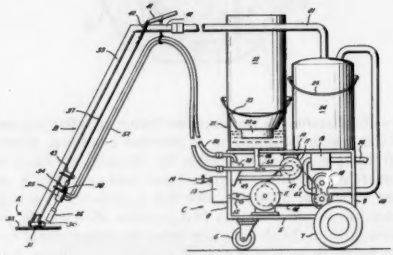
The invention provides a rotational power transmission for driving debris displacement means in street sweepers, the transmission including an innersection and an outer section carrying or connected to the debris displacement means, the sections having opposed conical surfaces one of which contains a deformed elastomeric ring engageable and capable of slippage on the opposing conical surface as the debris displacement means encounters abnormal resistances to its normal movement.

3,812,552

CLEANING APPARATUS FOR CARPETS AND THE LIKE

William G. Blackmon, Fort Worth, Tex., assignor to Steamatic, Inc., Fort Wayne, Tex.

Filed Sept. 14, 1972, Ser. No. 289,157
Int. Cl. A47l *5/00*
U.S. Cl. 15—321 **5 Claims**



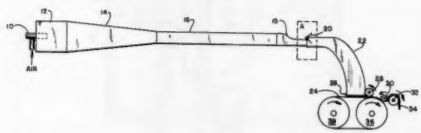
Carpet or upholstery cleaning apparatus uiltizing hot cleaning fluid, for instance, water with or without additives, has its heating device located remotely from the suction nozzle so as to simplify the construction thereof and reduce its bulk. In order to insure a constant supply of hot cleaning fluid adjacent the nozzle unit, a bypass line is provided which constantly returns the fluid to the heating element when the fluid is not being impinged on the work. The heating device may be located on a remote carriage which also carries the dirt separating suction tank, a cleaning fluid reservoir, and the cleaning fluid and suction pumps, or it may be mounted directly on the handle of the nozzle unit.

3,812,553

REORIENTATION OF FIBERS IN A FLUID STREAM

Preston F. Marshall, and James J. Silvi, both of Walpole, Mass., assignors to The Kendall Company, Walpole, Mass.

Continuation-in-part of Ser. No. 196,709, Nov. 8, 1971, abandoned. This application Apr. 27, 1972, Ser. No. 248,106
Int. Cl. D01g *25/00*
U.S. Cl. 19—156.3 **4 Claims**



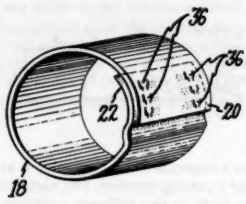
Fibers in a fluid stream, predominantly oriented in the stream direction, are reoriented by passing the stream into a curved enclosure which subjects the fibers to a centrifugal action which tends to realign the fibers in a direction normal to the fluid flow. By introducing artifical turbulence into the air stream, the orientation of the fibers may be varied from substantially random to substantially normal to the fluid flow. Associated means are provided for converting the fluid stream of fibers into a fibrous web with a controlled fiber orientation.

3,812,554

CRIMP LOCKED OUTER TURN FOR INDUCTION CORE

Willi Klappert, Hickory, N.C., assignor to General Electric Company, Pittsfield, Mass.

Filed Apr. 3, 1972, Ser. No. 240,466
Int. Cl. H01f 27/26; B65d 63/02
U.S. Cl. 24—20 EE 4 Claims



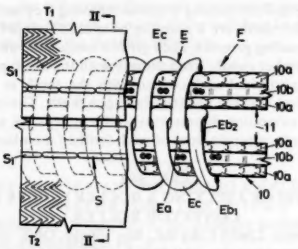
The outer turn of a precut laminated induction core is provided with a crimp lock to enable such turn to be locked to form a stacking ring or sleeve such that the other cut turns may be reassembled and formed within such crimp locked outer turn without welding or banding of such outer turn.

3,812,555

SLIDE FASTENER HAVING A FILLING CORE

Tadahiro Yoshida, Fujisawa, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 31, 1973, Ser. No. 393,560
Claims priority, application Japan, Sept. 1, 1972, 47-102237
Int. Cl. A44b 19/12
U.S. Cl. 24—205.1 C 4 Claims



A slide fastener having a filling core adapted to stabilize the position of the fastener coupling elements when mounted on the stringer tapes of the fastener. The core is made from a fabric of a knitted structure having at least wales and an inter-wale groove defined therebetween, the arrangement being that stitchings securing the elements to the tapes run through the core along the inter-wale therein without causing the core to become deformed or displaced relative to the longitudinal axis of the fastener.

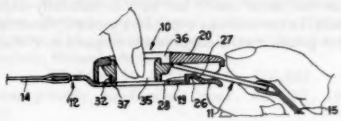
3,812,556

FASTENER

Arturo Colombo, Milan, Italy, assignor to Sitam Societa' Industriale Telai Automatici Milano S.r.l., Milan, Italy

Filed Oct. 10, 1972, Ser. No. 296,208
Int. Cl. A44b 11/25
U.S. Cl. 24—230 AK 4 Claims

A buckle for fastening safety belts, having two components each secured to a length of safety belt length and carrying teeth and holes respectively adapted to be mutually engaged and disengaged. One of the components is in the form of a casing wherein the other component can be inserted and engaged, such casing housing a locking element for the other component, adapted to be shifted into locking and releasing positions and that can be controlled through holes in the locking element and the casing-shaped component.

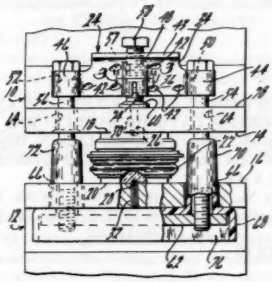


3,812,557

HOLDING CLAMP

Lawrence L. Meyer, Northville, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Feb. 5, 1973, Ser. No. 329,777
Int. Cl. A44b 21/00; G01l 1/04
U.S. Cl. 24—263 A 11 Claims



A holding clamp for clamping a thyristor between a pair of heat sinks. The clamp includes spaced clamping and base plates on opposite sides of the heat sinks. The plates are held together by a pair of spaced bolts secured to the base plate and in sliding engagement with the clamping plate. A center bolt is in threaded engagement with the clamping plate and aligned with and located between the spaced bolts. A pad is mounted for universal movement on one end of the center bolt and is engaged with a heat sink. A slot is located in the clamping plate and aligned with the axis of the center bolt. Upon rotation of the center bolt, the sides of the slot close an amount corresponding to the clamping force on the thyristor, thereby increasing the torque needed to turn the center bolt within the clamping plate.

3,812,558

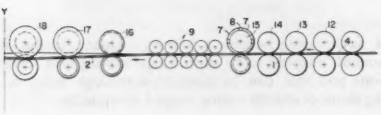
METHOD AND APPARATUS FOR MANUFACTURING EXPANDED STRUCTURAL MEMBERS AND ITS PRODUCTS

Hideyo Watanabe, No. 1-10-11 Higashi-gotanda, 1-chome, Shinagawa-ku, Tokyo, Japan

Filed Apr. 30, 1971, Ser. No. 139,077
Claims priority, application Japan, Apr. 30, 1970, 45-36413
Int. Cl. B21d 31/04
U.S. Cl. 29—6.1 10 Claims

This invention relates to a method of manufacturing expanded structural members from metal strip through a roll forming process, a slitting process, a horizontally expanding process with small rollers by rolling, a V-shape expanding

process, a recovering process, a levelling process, a reshaping process and/or reinforcing process. All the processes comprising only rotary motion with cold working. The lattice part of the member is elongated and slackened by rolling with small rollers, at the same time, the part is naturally expanded horizontally. In the V-shape expanding process, the strip sheet or shape is guided by the edges of the respective V-shape rollers without using guide bars, while the lattice part is expanded between the respective rollers. The lattice part is, in turn, rolled by the respective V-shape rollers and expanded by gradually being bent into a V-shape by the V-shape rollers, and in the final reinforcing process, the lattice part is reinforced by dottedly convex rollers meshing with each other in bead form.



3,812,559

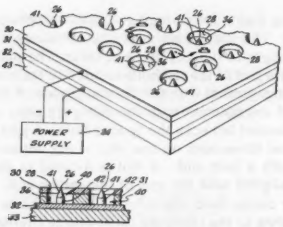
METHODS OF PRODUCING FIELD IONIZER AND FIELD EMISSION CATHODE STRUCTURES

Charles A. Spindt, Menlo Park, and Louis N. Heynick, Palo Alto, both of Calif., assignors to Stanford Research Institute, Menlo Park, Calif.

Division of Ser. No. 54,222, July 13, 1970, Pat. No. 3,665,241. This application Jan. 10, 1972, Ser. No. 216,539

Int. Cl. H01j 9/02

U.S. Cl. 29—25.18 **7 Claims**



Field-forming devices primarily useful as field ionizers and field emission cathodes and having as a basic element an array of closely spaced cones with sharp points supported on a substrate (in the most usual case conductive or semiconductive) are disclosed. Preferably, the field-forming structure is completed by a screen-like structure, e.g. as fine mesh screen, insulatively supported above the points with the center of apertures in the screen substantially aligned with the longitudinal axis of corresponding cones. A novel method of forming such structures includes placing a screen with a mesh corresponding to the desired number and packing density of sharp conical points in close proximity to, or in contact with, the substrate and projecting material through the screen onto the substrate whereby sharp cones of the material are formed on the substrates.

3,812,560

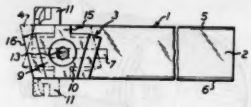
TOOL HOLDER ASSEMBLY

Wlajko Mihic, and Stig Ove Back, both of Gavle, Sweden, assignors to Mircona AB, Gavle, Sweden

Continuation of Ser. No. 778,226, Nov. 22, 1968, abandoned. This application Feb. 27, 1973, Ser. No. 336,356

Int. Cl. B26d 1/00

U.S. Cl. 29—96 **5 Claims**



A tool holder comprises a body to which is attached a supporting plate for a cutting member. The supporting plate is attachable to the body in two different positions and supports cutting members in two corresponding different positions in which the cutting members are respectively at the upper side and the lower side of the body.

3,812,561

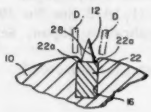
TEMPLE ROLL

William E. Lundgren, 540 W. Main St., Northboro, Mass. 01532

Filed Jan. 15, 1973, Ser. No. 323,524

Int. Cl. B21b 27/02

U.S. Cl. 29—121 A **8 Claims**



A temple roll comprising a cylinder having a cylindrical surface in which there are a plurality of spaced parallel, longitudinally extending grooves, each groove containing an elongate toothed member rigidly fixed therein with the teeth projecting from the cylindrical surface and with the teeth in adjacent grooves offset half the distance between teeth. There are longitudinally extending depressions in the cylindrical surface of the cylinder at opposite sides of each toothed member.

3,812,562

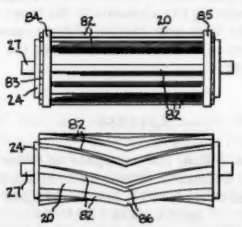
METHOD OF APPLYING A ROLLER SLEEVE ON A CONVEYOR ROLLER

John R. Lovett, 23604 Lake Rd., Bay Village, Ohio 44140

Division of Ser. No. 110,462, Jan. 28, 1971, Pat. No. 3,705,455, which is a continuation-in-part of Ser. No. 43,349, June 4, 1970, abandoned. This application Sept. 27, 1972, Ser. No. 292,642

Int. Cl. B21h 1/14; B21k 1/02; B23p 11/02

U.S. Cl. 29—148.4 D **1 Claim**



A resilient tubular sleeve of elastomeric material provided with a plurality of longitudinally-extending circumferentially-

spaced cavities inwardly thereof to provide a replaceable surface for a conveyor roller. The cavities provide an intermittent series of compressible wall sections on the sleeve for engagement with and displacement by a conveyor belt in response to axial rotation of the roller to provide a self cleaning roller surface. The tubular sleeve has a smaller internal diameter, in its unstressed condition, than the diameter of the roller on which it is mounted. The tubular sleeve is mounted on the roller by expanding its internal diameter sufficiently to permit it to slide axially along the roller to the desired position and thereafter permitting it to contract upon the roller surface and resiliently grip it. Improved techniques, tools and devices for effecting the mounting of the tubular sleeve on the roller are disclosed, as well as the utilization of these techniques for deforming the sleeve to provide a self-aligning conveyor roller.

3,812,563

METHOD OF FORMING A COMPOSITE BEARING STRUCTURE

Milton W. Toaz, Bedford, Ohio, assignor to Gould Inc., Chicago, Ill.

Filed Nov. 29, 1972, Ser. No. 310,356

Int. Cl. B23p *11/00;* **B21d** *53/10*

U.S. Cl. 29—149.5 PM **19 Claims**

A method of forming a composite bearing structure including a metallic substrate having a bearing material adherently bonded thereto is provided which comprises the steps of treating the surface of a metallic substrate to remove undesirable substances therefrom, applying a layer of metallic bonding material to at least a part of the treated surface of the substrate, covering at least a part of the bonding material with a layer of bearing material, heating the so-formed article to a temperature sufficient to activate both the bonding material and the bearing material, and densifying both the bearing material and the bonding material while causing the metallic substrate to be reduced in thickness to thereby cause the bearing material to become bonded to the bonding layer which, in turn, is bonded to the metallic substrate.

3,812,564

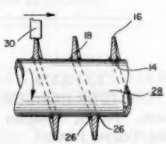
METHOD OF MANUFACTURING A HELICAL CONVEYOR FOR A CENTRIFUGE

Leonard Shapiro, Upper Darby, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed July 26, 1972, Ser. No. 275,375

Int. Cl. B23p *15/00*

U.S. Cl. 29—156.8 R **7 Claims**



The inner periphery of a given helical coil is machined (while the coil is at zero pitch) to a dimension which will decrease to the diameter of a given shaft when the coil is stretched to a predetermined pitch, and then the machined coil is welded to the shaft at that pitch.

3,812,565

SINTERED FE—CR—C—[MO—V—NI] ALLOYS IMPREGNATED WITH PB OR RB-BASE ALLOYS

Hiroshi Seino, Yokohama; Shingichi Suzuno, Tokyo; Yoshiaki Takeya, Matsudo; Tsutomu Tobita, Matsudo, and Takeshi Fukaya, Matsudo, all of Japan, assignors to Nissan Motor Company, Ltd., Yokohama and Hitachi Powdered Metals Company, Matsudo, both of, Japan

Filed Dec. 19, 1972, Ser. No. 316,545

Claims priority, application Japan, Dec. 27, 1971, 46-105526

Int. Cl. B22f *3/26, 5/00;* **C22c** *1/08*

U.S. Cl. 29—182.1 **9 Claims**

A lead-filled sintered ferrous alloy containing carbon and chrome and preferably also molybdenum and vanadium is prepared in a powder metallurgy method and impregnated in its voids with lead. The alloy is characterized for its increased wear and heat resistant abilities and is accordingly advantageous when used as a material of a valve seat of an internal combustion engine using leadless fuel.

3,812,566

COMPOSITE NICKEL IRON ELECTROPLATE AND METHOD OF MAKING SAID ELECTROPLATE

Richard J. Clauss, Allen Park, Mich., assignor to Oxy Metal Finishing Corporation, Warren, Mich.

Continuation of Ser. No. 268,350, July 3, 1972, abandoned. This application July 27, 1973, Ser. No. 383,428

Int. Cl. B23p *3/00;* **C23b** *5/50*

U.S. Cl. 29—183.5 **10 Claims**

A composite nickel-iron electroplate comprised of two essential layers, the first layer comprised of an iron-nickel alloy wherein the iron is present in an amount ranging from about 20 percent to about 45 percent by weight iron and having a minimum thickness of about 0.1 mil; and a top layer comprised of a microdiscontinuous chromium electrodeposit.

3,812,567

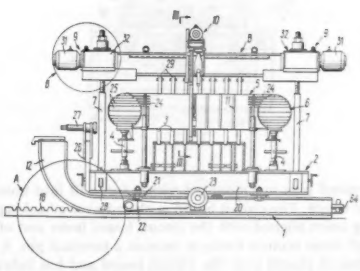
STAND FOR ASSEMBLING AND PRESSING MAGNETIC CIRCUITS OF POWER TRANSFORMERS

Gennady Ivanovich Pshenichny, ulitsa Kremlevskaya, 27, kv. 8; Yakov Zinovievich Checheljuk, Dnepropetrovskoe shosse, 62, kv. 65, and Ivan Ivanovich Gryazev, Berezovy pereulok, 3, all of Zaporozhie, U.S.S.R.

Filed July 7, 1972, Ser. No. 269,582

Int. Cl. H05k *13/00*

U.S. Cl. 29—203 D **4 Claims**

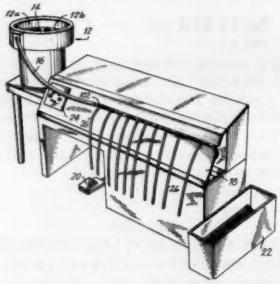


A stand comprises an assembly table mounted on a turnable base with said table having supports for cores and yokes of a magnetic circuit and provided with a winding device. The winding device is provided with a separable body embracing the elements of the magnetic circuit to be bandaged. The body accommodates a separable ring rotating about the elements of the magnetic circuit and carrying an axle for receiving a spool with a tape of bandaging material.

3,812,568
APPARATUS FOR THE APPLICATION OF SHRINK TUBING

Edward Nemeth, Fairlawn, and Joseph Gromek, East Paterson, both of N.J., assignors to VIP Machinery Inc., Paterson, N.J.

Filed Feb. 12, 1973, Ser. No. 331,822
Int. Cl. H01r *43/00*
U.S. Cl. 29—203 D **7 Claims**

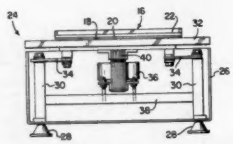


Apparatus for applying heat shrinkable tubing to wire assemblies and similar objects includes a feeding device for feeding individual sections of shrink tubing to a waiting position in front of an operator and a lateral conveyor having a pickup point adjacent the waiting position for carrying the tube covered assembly through a heating section wherein the tubing is shrunk around the end of the assembly to be encapsulated. The apparatus is designed to function with a wide range of wire sizes and tubing types.

3,812,569
METHOD AND APPARATUS FOR MOUNTING TERMINAL PINS

Kenneth L. Kufner, Hickory Hills; Thomas P. Pellegrino, and Frank P. Chmela, both of Downers Grove, all of Ill., assignors to Molex Incorporated, Downers Grove, Ill.

Filed Feb. 16, 1973, Ser. No. 333,360
Int. Cl. H05k *13/04*
U.S. Cl. 29—203 B **12 Claims**

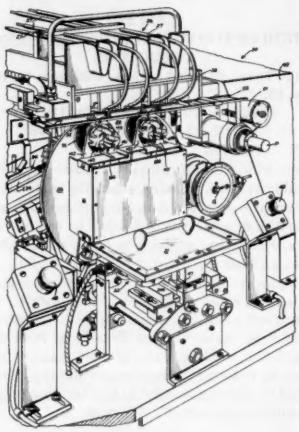


Terminal pins are mounted with a force fit into holes in a circuit board. The circuit board is placed over a backing plate having holes aligned with the circuit board holes and of large enough cross section freely to receive a terminal pin. A loading plate is placed over the circuit board and has holes each sized slidingly to receive a single terminal pin. A feeding plate having a thickness at least approximately equal to the terminal pin length is placed over the loading plate, and the feeding plate has holes of a diameter larger than about one-third of the terminal pin length. A number of terminal pins are placed on the upper surface of the feeding plate, and the feeding plate, loading plate, circuit board and backing plate are all vibrated. During the vibration a group of terminal pins are loaded into each feeding plate hole, and a single terminal pin is loaded into each loading plate hole. The feeding plate is removed from the loading plate and the excess pins are removed leaving a single terminal pin in each loading plate hole. The terminal pins are then pressed through the loading plate into the circuit board.

3,812,570
APPARATUS FOR HANDLING MAGNETIC CORES AND PERFORMING WINDING PROCEDURES

Lowell M. Mason, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Oct. 15, 1971, Ser. No. 189,616
Int. Cl. H02k *15/00*
U.S. Cl. 29—205 D **7 Claims**



Method and apparatus for conveying one or more cores to a first conveying means, e.g., a carriage movable in shuttle-like fashion between dwell positions. Carriage includes means for supporting a core and moving same to and from transporting means such as a turntable or turret that includes core supporting means. First conveying means also can include a second carriage. Winding shoes may be selectively transferred between the carriages and turntable that moves them to a high speed winding station. Also disclosed are mechanisms and methods for automatically establishing winding leads and anchoring the same.

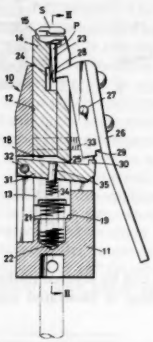
3,812,571
SLIDER HOLDER

Hisashi Dori, Uozu, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 22, 1973, Ser. No. 362,783
Claims priority, application Japan, May 24, 1972, 47-51913
Int. Cl. B23p *19/04*
U.S. Cl. 29—207.5 SL **3 Claims**

A slider holder for holding sliders for mounting on a fastener chain is provided with a spring-loaded lever means engageable with the slider, a spring-loaded locking means for normally holding the lever means in locked position and a

spring-loaded slider mounting means for releasably mounting sliders thereon. The said three means are operatively associated such that the slider is firmly retained in place during



the threading therethrough of a fastener chain and released with utmost ease by disengaging the lever means from the locking means.

3,812,572

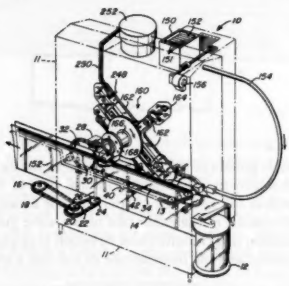
TUBE APPLICATOR

Roy J. Weikert, c/o General Films, Inc., Covington, Ohio 45318

Filed Feb. 14, 1973, Ser. No. 332,373

Int. Cl. B23p *19/04;* **B23q** *7/10;* **B23p** *17/00*

U.S. Cl. 29—208 B **28 Claims**



Method and apparatus for attaching a dispensing tube to the side wall of an open mouth bag. The bags are interconnected in web form and the tube applicator is positioned intermediate the unwind stand for the web of bags and filling and sealing equipment, so that as the web of bags are unwound a flexible dispensing tube may be attached to a side wall of each of the bags before they are fed into the filling and sealing apparatus downstream of the tube applicator.

3,812,573

METHOD AND APPARATUS FOR REMOVING INTERLOCKING ELEMENTS FROM SLIDE FASTENER CHAIN

Takeo Fukuroi, Uozu, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

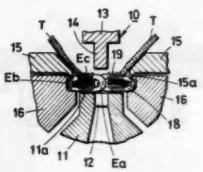
Filed Nov. 24, 1972, Ser. No. 309,611

Claims priority, application Japan, Dec. 14, 1971, 46-101747

Int. Cl. B23p *19/00*

U.S. Cl. 29—427 **3 Claims**

A method and apparatus for removing interlocking fastener elements from a slide fastener chain at predetermined intervals so as to provide alternate element-free and element-containing sections, the element-free or "space" sections being utilized for the assembling on the fastener chain of sliders and end stops. Gripping means are provided in the apparatus for gripping the base portions of interlocking element in each ele-



ment row and retaining a length of elements in position for removal first of the coupling head portions of the elements. Thereafter, said gripping means are retracted sidewise or outwardly of the fastener chain, taking with them the remaining debris of elements off the chain.

3,812,574

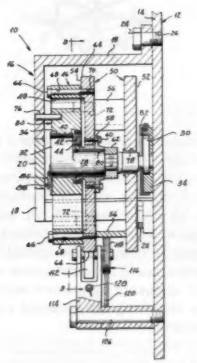
APPARATUS FOR PROCESSING THE TROCHOIDAL HOUSING SURFACES OF ROTARY PISTON MECHANISMS

Charles Jones, Hillsdale, N.J., and Alexander H. Raye, Wellsville, N.Y., assignors to Curtiss-Wright Corporation, Wood-Ridge, N.J.

Filed Mar. 2, 1972, Ser. No. 231,119

Int. Cl. B23p *23/04*

U.S. Cl. 29—560 **11 Claims**

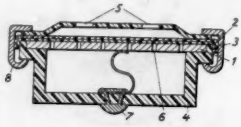


The apparatus has a frame and a shaft having eccentric portions journalled for rotation on the frame. A housing support element for a trochoidal housing member to be treated is mounted for rotation on said shaft to rotatively carry the housing member in a path about the shaft. A tool holder is fixedly secured to the frame to support a tool adjacent the trochoid surface of the housing member. A drive means is provided to rotate the housing member and shaft relative to the tool holder and tool in a constant perpendicular spaced relation to the trochoid surface and at a controlled velocity.

3,812,575
ELECTRET MICROPHONE

Jan-Olof Hedman, Tyreso, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Nov. 22, 1972, Ser. No. 308,832
Claims priority, application Sweden, Dec. 2, 1971, 15456/71
Int. Cl. H04r 31/00
U.S. Cl. 29—594 2 Claims

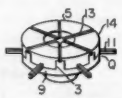


The invention relates to a procedure for manufacture of an electret microphone comprising a fixed electrode and a movable electrode, the movable electrode comprising a first plastic film which is metallized and a second plastic film which is electro-statically polarized. According to the invention, there are a first processing stage in which the first and second plastic films are metallized and polarized respectively and a second processing stage in which the metallized plastic film, the polarized plastic film and the fixed electrode are assembled together.

3,812,576
METHOD OF MAKING COMMUTATOR FOR REVOLVING ARMATURE

Terumoto Yamaguchi, Anjo, Japan, assignor to Nippondenso Co., Ltd., Kariya-shi Aichi-ken, Japan

Filed Oct. 11, 1972, Ser. No. 299,609
Claims priority, application Japan, Oct. 25, 1971, 46-84604
Int. Cl. H01r 43/00
U.S. Cl. 29—597 5 Claims



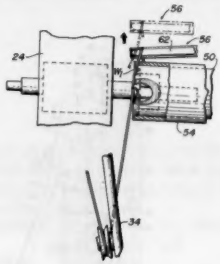
A method of making a commutator for a revolving armature which has a surface to be in contact with a brush is perpendicular to the shaft of the armature is improved. Recessed portions are formed on the internal surface of a cylindrical member having an open end with an outwardly extending flange and a bottom. The recessed portions are removed after insulating material is filled in the cylindrical member. The cylindrical member made of conductive material is divided into commutator segments by grooves which extend through holes formed by removing the recessed portions after filling the insulating material.

3,812,577
ARMATURE WINDING METHOD AND APPARATUS

Jerry L. Compton, and David R. Seitz, both of Dayton, Ohio, assignors to The Globe Tool and Engineering Company, Dayton, Ohio

Filed Mar. 13, 1973, Ser. No. 340,685
Int. Cl. H01r 43/00
U.S. Cl. 29—597 12 Claims

The lead wires of an armature wound by the fliers of a double flier armature winding machine are gripped by clamps engaging the wires between the commutator tangs and the fliers. The wires are severed against the commutator tangs by relative movement of the clamps and the armature. Both the start



and finish wires can be severed in this manner and a movable clamp construction is illustrated especially for severing the start wires.

3,812,578
METHOD OF PREPARING TWO WAVE GUIDES OF DIFFERING CROSS SECTION FOR INTERCONNECTION

Klaus Prinzhorn, Celle, Germany, assignor to Kabel -und Metallwerke Gutehoffnungschutte Aktiengesellschaft, Hanover, Germany

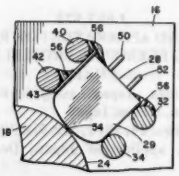
Filed Sept. 13, 1971, Ser. No. 179,955
Claims priority, application Germany, Sept. 22, 1970, 2046525
Int. Cl. H01p 1/00
U.S. Cl. 29—600 3 Claims

Two wave guides of different cross sections are prepared for interconnection by working the end of one of the two wave guides so that the end face proper thereof assumes the cross-sectional contour of the other one of the wave guides followed by a transition in axial direction between said same cross-sectional contour and the original one of the one wave guide.

3,812,579
METHOD OF MANUFACTURING MAGNETIC DRUM MEMORY APPARATUS

John B. Roes, San Diego, Calif., assignor to Metrolab, Inc., a Subsidiary of Cubic Corp., San Diego, Calif.

Filed Oct. 4, 1971, Ser. No. 186,238
Int. Cl. G11b 5/42
U.S. Cl. 29—603 4 Claims



The memory apparatus incorporates a drum, mounted for rotation, and a series of hard mounted heads, spaced from the

drum magnetic recording medium surface. The mounting structure includes spaced parallel aligning bars, utilized to precisely align the magnetic heads prior to finally fixing them to the structure, and resilient plastic wedges utilized to maintain a bias against the aligning bars, to compensate for the stresses induced in the assembly process. The precise spacing from the magnetic medium is accomplished by placing a spacing film over the drum, which film is removed after final assembly, leaving the proper head-to-medium gap. The final configuration is maintained by the use of epoxy adhesive to secure the heads to the aligning bars and retaining bars. The frame structure and head utilize the same metal alloy to maintain the head-to-medium gap during temperature variations. The resulting apparatus may be utilized in a voice response system for producing computer ordered, human voice response, to various commands. In this application the drum is rotated at a rate of one revolution per second and the head gap, head-to-medium spacing, and medium thickness, controlled to produce a relatively flat response characteristics over the frequencies of importance and thereby enable the use of relatively simple amplifiers with linear response characteristics.

3,812,580

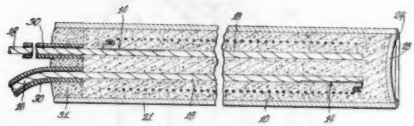
METHOD OF MAKING ELECTRIC HEATING ELEMENTS

Lester D. Drugmand, Pittsburgh, Pa., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Feb. 6, 1970, Ser. No. 9,158

Int. Cl. H01c *17/00*

U.S. Cl. 29—611 **1 Claim**



An electric heating element, formed by winding a resistor wire about a refractory core, disposing terminal portions of said wound wire within respective ones of a pair of openings extending longitudinally through the core, inserting flexible terminal conductors into respective core openings to electrically engage with respective terminal portions, inserting the core assembly within a tubular metal sheath with the terminal conductors extending outwardly of the sheath to form flexible leads for connection to a source of electrical energy, filling the sheath with granular refractory material and submitting the sheath to a side pressing force to compact the refractory material.

3,812,581

METHOD FOR FORMING ELECTRICAL JOINTS BETWEEN INTERMEDIATE PARTS OF AN ELONGATED CONDUCTOR AND SELECTED CONDUCTIVE ELEMENTS ON AN ELECTRICAL ASSEMBLY

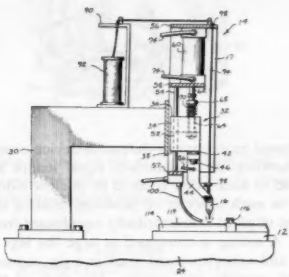
Raymond B. Larson, and Frank W. Wogoman, both of South Bend, Ind., assignors to Wells Electronics, Inc., South Bend, Ind.

Division of Ser. No. 879,234, Nov. 24, 1969, Pat. No. 3,650,450. This application Nov. 3, 1971, Ser. No. 195,520

Int. Cl. H01r *43/00*

U.S. Cl. 29—628 **2 Claims**

A method and means for forming electrical joints between intermediate parts of an elongated conductor and selected conductive elements on an electrical assembly. The electrical assembly is mounted upon a shiftable support means. A shiftable soldering assembly is positioned above the support means and carries an intermediate part of the elongated conductor. The soldering assembly and support means are shifted relative to each other to cause the intermediate conductor part to be held against a selected conductive element. The intermediate conductor part is then heated to cause the stripping or melting of the insulation, if any, from the conductor part and the melting of the solder on the conductive element in contact with the conductor part. The conductor part is then cooled to permit the melted solder to adheringly solidify to the conductor part.



With the conductor part so anchored to the electrical assembly the soldering assembly and support means are shifted relative to each other to cause another intermediate part of the conductor to be held against another selected conductive element. This last mentioned intermediate conductor part is heated and cooled to cause its adherence to the contacting conductive element in the manner previously described for heating and cooling the first mentioned intermediate conductor part.

3,812,582

METHOD AND APPARATUS FOR THE PRODUCTION OF ELECTRICAL CONTACTS ON CONTACT CARRIERS

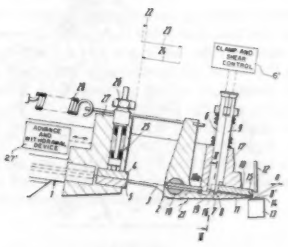
Hans-Rudolf Zollinger, Bergstr. 23, 8954 Geroldswil, Switzerland

Filed Nov. 13, 1972, Ser. No. 305,781

Claims priority, application Switzerland, Dec. 4, 1971, 17608/71

Int. Cl. H01r *9/00*

U.S. Cl. 29—630 A **12 Claims**

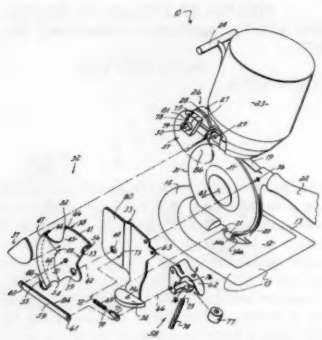


A cutting device for cutting a contact piece from a wire or ribbon-like contact material fed thereto by a first guide, after which an advancing and withdrawing device advances the remaining contact material to push the cut contact piece from the cutting device along a second guide in alignment with the first guide to a conductive connection means where the contact piece is conductively connected to a contact carrier. The remaining contact material is withdrawn, by the withdrawing device to bring the contact material into position for cutting the next contact piece, by a distance which is smaller by the length of the cut contact piece than the distance by which the cut contact piece is advanced to the position for conductive connection at the conductive connection means.

3,812,583
PERSONAL PROTECTIVE DEVICE
John Eugene Breglia, 812 E. Copper St., Tucson, Ariz. 85719
Continuation-in-part of Ser. No. 214,984, Jan. 3, 1972, abandoned. This application Oct. 19, 1972, Ser. No. 298,877
Int. Cl. B26f 1/24
U.S. Cl. 30—164.9 6 Claims

A personal protective or defensive device comprising a pair of leg members of substantially equal length and pivotably connected to each other so as to be in close side by side relationship to each other in all positions relative to each other. The point of pivot is substantially equidistant from all ends of the legs. A spring is employed to urge the legs toward open position and suitable means, such as a pin, is used to limit the degree of opening and closing. The ends of the legs carry metal spikes which extend inward and also similar spikes are mounted on the hollowed inner edge of the legs (intermediate the ends thereof and the point of pivot mounting). The inner faces of the legs are preferably flat and may be moved to an overlapping position so that the spikes at the ends thereof face outwardly of the device.

3,812,584
SAFETY GUARD FOR A CLOTH CUTTING MACHINE
Joseph E. Peter, Cincinnati, Ohio, assignor to The Wolf Machine Company, Cincinnati, Ohio
Filed Sept. 20, 1972, Ser. No. 291,361
Int. Cl. B26b 25/00, 29/00
U.S. Cl. 30—273 6 Claims

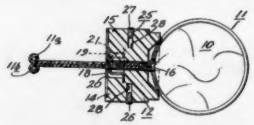


A novel safety guard for a cloth cutting machine of the vertically oriented, circular blade type. When in the closed position, the safety guard includes a fixed section that protects a portion of the blade's exposed periphery and a movable primary section that substantially protects the rest of the blade's exposed periphery. A trigger mechanism is fixed adjacent the machine handle, the trigger permitting an operator to move the primary section between closed and open positions as he grips the handle when using the cloth cutting machine. An adjustment is provided with the trigger mechanism to regulate the mouth opening of the primary section in relation to the height of the cloth stack to be cut. The trigger mechanism is spring loaded so that the primary section is continuously biased toward the closed position, thereby causing an operator to be consciously aware of opening the safety guard when readying the machine for cutting and causing the primary section to close automatically if the trigger is released.

The movable primary section of the safety guard defines a notch which, when the primary section is in the closed position, allows a blade sharpener device to engage the circular blade's periphery for sharpening the blade. An axuiliary section of the safety guard is fixed to the sharpener device, that auxiliary section overlying the notch in the primary section when the sharpener device is retracted and when the primary section is closed. The circular blade can be ground only when its periphery is completely protected because the notch is the primary section only registers with the sharpener device when that primary section is closed.

The entire safety guard is structured so that same can be removed from the cloth cutting machine as a single unit simply by unscrewing one thumb screw. This allows simple and easy change of the circular cutting blade when required.

3,812,585
DENTAL MATRIX BAND AND CLAMP ASSEMBLY
John E. Balson, Devon Professional Bldg., Devon, Pa. 19333
Continuation-in-part of Ser. No. 123,235, March 11, 1971, abandoned. This application Feb. 18, 1972, Ser. No. 227,405
Int. Cl. A61c 5/12
U.S. Cl. 32—63 9 Claims



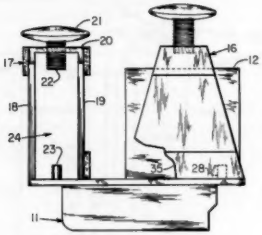
Disposable clamp is provided for use with a matrix band during the tooth-filling operation. The clamp has a narrow slot extending through it which slidably receives both ends of the matrix band with the ends of the band positioned in side-by-side relation. Catch means is mounted in the clamp adjacent the slot on the side of the clamp facing away from the tooth to permit the band to be displaced relative to the clamp in one direction but to prevent the band from slipping through the catch in the opposite direction for the purpose of maintaining the band snugly engaged around the tooth. Catch release means is provided to permit disengagement of the band from the catch so that the catch and clamp may be loosened or released from the band and the band thereafter removed from the tooth. In one form of the disclosure the catch release means comprises a member which normally urges the catch means into engagement with the band while in another form of the disclosure the catch release means comprises a removable member which normally urges the ends of the bands away from one another into engagement with the catch means.

3,812,586
CHROMATOGRAM READING INSTRUMENT
Hideji Itokawa, Tokyo, Japan, assignor to Funakoshi Pharmaceutical Co., Ltd., Tokyo, Japan
Filed Feb. 2, 1972, Ser. No. 222,766
Int. Cl. G06g 1/02
U.S. Cl. 33—1 C 4 Claims

An instrument for direct reading, without intermediate calculation, of interpretive indices of a chromatogram or the like. The instrument is comprised of an alignment table and a reading scale plate pivotally mounted on the alignment table. Both alignment table and reading scale plate are transparent, and are constructed to be placed directly over the subject chro-

matogram. Markings on the table provide for alignment with the chromatogram; the reading scale plate is movable to a prescribed position over the deposits on the chromatogram; the interpretive indices may then be read directly from a scale marked on the plate.

3,812,587
INDEXING MEANS FOR WALL PANEL OPENINGS
Johnny C. Elkins, and Gilbert A. Theriot, Box 4030, both of San Angelo, Tex., assignors to said Theriot, by said Elkins
Continuation-in-part of Ser. No. 100,080, Dec. 21, 1970, Pat. No. 3,672,064. This application June 22, 1972, Ser. No. 265,289
Int. Cl. G01b *3/02*
U.S. Cl. 33—138 **10 Claims**

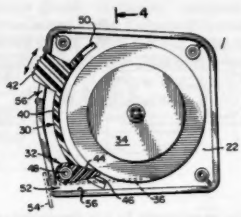


Indexing apparatus for accurately marking and positioning indicia to enable cutouts to be formed in a panel in order to accommodate fixtures and other objects associated with a building structure which must be received within the cutouts when the panel is attached to the structure.

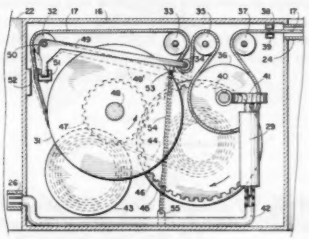
A molded unitary assembly having means thereon for accommodating spaced apart normally disposed tape measuring apparatus so that the extensible tapes of the tape assemblies can be retracted into and extended from the tape cases. Means are included in the assembly which cooperates with the tape apparatus for locking the tape blade into any desired position. The tape assembly can be removed from the main housing for replacement or auxiliary use.

3,812,588
TAPE MEASURING UNIT AND LOCKING AND RELEASING DEVICE THEREFOR
Robert A. Bennett, Shelton, Conn., assignor to Waterbury Lock & Specialty Co., Milford, Conn.
Filed Apr. 5, 1973, Ser. No. 348,042
Int. Cl. G01b *3/10*
U.S. Cl. 33—138 **6 Claims**

A two-piece locking and releasing device incorporating a pivotable wedge for direct and positive tape locking and a finger-operable cam member cooperating with the wedge member, for use in tape measuring units having automatic take-up means, provides an inexpensive, positive extended tape lock acting directly on the extended tape itself. This two-piece locking and releasing device provides the desired positive tape lock in any tape extended position.



3,812,589
BOOM LENGTH INDICATOR
Harry Baldwin Schultheis, Woodland Hills, Calif., assignor to W. C. Dillon & Company, Inc., Van Nuys, Calif.
Filed May 25, 1972, Ser. No. 256,701
Int. Cl. G01b *3/12, 5/02*
U.S. Cl. 33—139 **2 Claims**

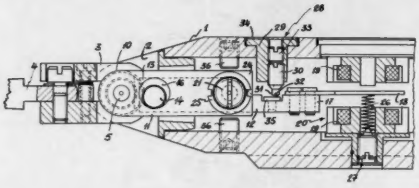


The length of a telescoping boom on a crane is indicated to the crane operator by a reel of cable mounted on a fixed portion of the boom with a free end of the cable secured to the far end of the boom so that extension of the boom will pull cable from the reel. A measuring pulley is rotated by cable withdrawn from the reel or retracting into the reel, this measuring pulley operating an electrical potentiometer to provide an electrical signal proportional to the length of cable withdrawn. This signal operates a meter calibrated in units of length in the cab of the crane so that the operator is at all times advised of the length of the boom.

3,812,590
ELECTRONIC SENSOR
Fritz Nigg, Lausanne, and Jean-Claude Risse, Prangins, both of Switzerland, assignors to Tesa S.A., Renens, Switzerland
Filed Apr. 9, 1973, Ser. No. 348,911
Claims priority, application Switzerland, May 18, 1972, 7373/72
Int. Cl. G01b *7/10*
U.S. Cl. 33—172 E **7 Claims**

An electronic sensor with lever wherein a lever carrying a feeler is pivoted at the end of a casing, the movements of said feeler being transmitted to the movable element of an electronic transducer by means of a reversing mechanism having two levers whereof the first is fixed to the lever carrying the feeler and pivots about the same shaft as the latter, said

mechanism being able to move, counter the action of at least one elastic member, the movable element of the transducer in



a same direction in response to any displacement of the lever carrying the measuring key effected from a rest position in the two pivotal directions of the lever carrying the feeler.

3,812,591

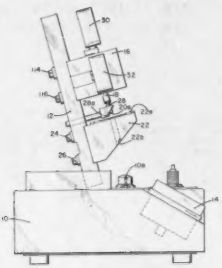
MULTIFUNCTION THREAD GAGE

Orean E. Michaud, Bristol, Conn., assignor to Colt Industries Operating Corp., West Hartford, Conn.

Filed May 8, 1972, Ser. No. 251,140

Int. Cl. G01b *5/16, 3/36*

U.S. Cl. 33—199 **20 Claims**



A thread gage for measuring the pitch diameter, ovality and drunkenness of a threaded part includes two reed mechanisms which are interconnected to a gage tip in engagement with the threaded part. The reed mechanisms operate simultaneously, but in an independent manner, to respectively sense horizontal and vertical displacements of the gage tip.

3,812,592

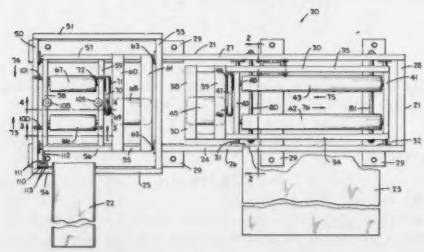
VEHICLE WHEEL ALIGNMENT CHECKING APPARATUS

Hans O. Haupt, 4509 N. Priscilla Ave., Indianapolis, Ind. 46226

Filed July 26, 1972, Ser. No. 275,341

Int. Cl. G01b *5/25*

U.S. Cl. 33—203.13 **7 Claims**



An apparatus for checking the alignment of the front wheels of a vehicle. A first and second platform are movably mounted to a frame with each platform receiving a front wheel of the vehicle. Each platform includes a pair of rollers, with one of the rollers of each platform being positively driven by an electric motor to rotate the vehicle wheel positioned on the platform. The first platform is movable in a lengthwise direction with respect to the vehicle whereas the second platform is movable in a lateral direction perpendicular to the lengthwise direction. An indicator is mounted to the frame and second platform to measure the amount of movement of the second platform to and from the first platform. One wheel of the vehicle is rotated by the rollers on the first platform and is pivoted until the wheel is aligned with respect to the first platform. The vehicle wheel on the first platform is then stopped, the steering wheel of the vehicle is fixed in place and the vehicle wheel on the second platform is rotated. The rollers of the platform may have a concave configuration or a constant diameter.

3,812,593

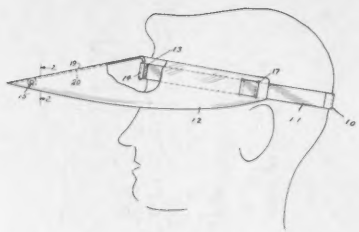
GOLF VISOR LEVEL DEVICE

John J. Wydro, 553 Bouquin Cir., Oil City, Pa. 16301

Filed Mar. 6, 1972, Ser. No. 231,814

Int. Cl. G01c *9/28*

U.S. Cl. 33—373 **2 Claims**



The specification discloses a golfer's green reader made up of an elastic head band, a visor attached to the head band and a spirit level attached to the front part of said visor on the lower side thereof, the level is disposed adjacent the front of the visor so that the user can view the level and thereby estimate the topography of the terrain of a golf green. The visor is sufficiently long that the spirit level is brought far enough from the user's eyes so that the eyes may focus on it.

3,812,594

GAUGE FOR SHIFTABLE SYNCHRONIZING SWIVEL JOINTS

Hans Lukasczyk, Wolfsburg, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

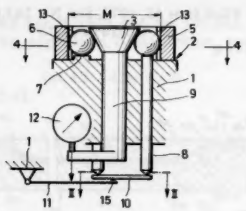
Continuation-in-part of Ser. No. 837,154, June 27, 1969, abandoned. This application Sept. 21, 1971, Ser. No. 182,510

Int. Cl. G01b *5/00, 5/08*

U.S. Cl. 33—174 R **5 Claims**

A device for the classification of shiftable synchronizing swivel joints having a housing in which a guide bolt with a

cone is axially shiftable in the housing and a plurality of ball shaped contact feelers are disposed in grooves in the joint element and a dial gauge is connected to the device to measure the arithmetic mean of the dimensions of the grooves.



3,812,595

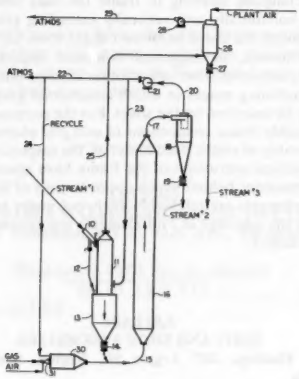
METHOD OF AND MEANS FOR FLASH DRYING NATURALLY OCCURRING OILSEEDS

Donald Spencer Engelhart, 10600 Drew St., Chicago, Ill., and Ned Henry Engelhart, 32 W. 60th St., Westmont, Ill.

Filed June 21, 1972, Ser. No. 264,984

Int. Cl. F26b *3/10*

U.S. Cl. 34—10 **6 Claims**



Oil and protein bearing naturally occurring seeds, beans, such as cottonseeds, rapeseeds, soybeans, high in moisture content and not suitable for storage, are subjected to a process which involves the reduction in the surface moisture and absorbed water content of the solids material to the desired moisture content at an accelerated drying rate, utilizing flash drying, which is suit-able, and safe, for storage and for future processing of the afore-mentioned Earth produced materials. The method and means involves specially designed equipment employing heated gases, at very minimal retention time, cocurrent contact gases-oilseeds, to effect the efficient vaporization and removal of the moisture to the desired level, dependent on the particular material. The process is conducted on a continuous basis, utilizing the naturally occurring material without denaturation of the protein content.

A consequential advantage and benefit of this drying process is the cleaning of the oil and protein bearing naturally occurring seeds, beans, as mentioned heretofore, prior to the drying method, to separate undesirable materials, such as stems, sticks, leaves, dirt, dust, dockage, from the whole seeds, beans, as received, in specially designed attendant equipment as an integral portion of the process.

3,812,596

CONTROL AND MONITORING OF PROCESSES IN DEPENDENCE ON THE VAPOR PRESSURE

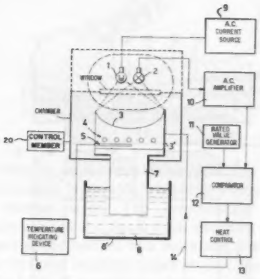
Ingo Wilmanns, Bruhl, Germany, assignor to Leybold-Heraeus-Verwaltung GmbH, Cologne-Bayental, Germany

Filed Feb. 1, 1972, Ser. No. 222,638

Claims priority, application Germany, Feb. 1, 1971, 2104499

Int. Cl. F26b *21/10*

U.S. Cl. 34—51 **7 Claims**



For controlling and monitoring processes in dependence on vapor pressure, the light reflection from a surface, set to a given temperature in the range of the beginning condensation of the vapor, is measured and then the change in the light reflection is utilized as a control value.

3,812,597

OVEN

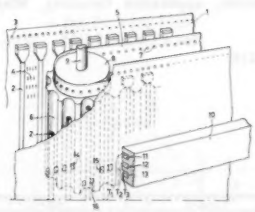
Jean Robert Perilhou, Bourg-la-Reine, and Michel Joseph Auphan, Courbevoie, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed June 1, 1973, Ser. No. 366,057

Claims priority, application France, June 29, 1972, 72.23597

Int. Cl. F26b *25/02*

U.S. Cl. 34—105 **2 Claims**

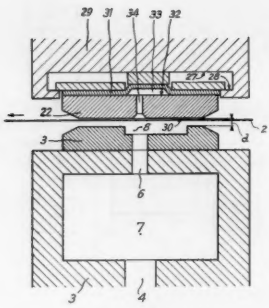


A device for heating liquid samples carried in test tubes which are provided on a moving conveyor belt. A second belt has cavities so as to accommodate the test tubes, moves at the same speed with respect to the first belt. A wall which is parallel to the belts has longitudinal grooves through which air of different temperatures can flow. Openings are provided in the conveyor near each test tube, opposite to one of the grooves so that the air in the groove can heat the test tube.

3,812,598
APPARATUS FOR DRYING DAMP WEB MATERIAL

Michel S. M. Lefebvre, and Philippe D. Lapierre, both of Saint-Quentin, France, assignors to Omnium de Prospective Industrielle S.A., Neuville Saint-Amand, France

Filed Jan. 24, 1973, Ser. No. 326,427
Claims priority, application France, Jan. 26, 1972, 72.02613; Oct. 2, 1972, 72.34900
Int. Cl. F26b *13/00*
U.S. Cl. 34—155 10 Claims

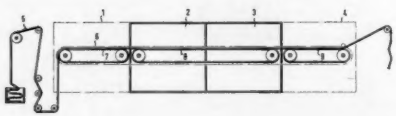


Apparatus for drying damp web material having a distribution chamber with inlet and outlet slots through which the material is moved, the chamber having means for receiving compressed gas to which the material is subjected for uniform drying.

3,812,599
APPARATUS FOR THE TREATMENT OF TEXTILE FABRIC

Kurt Bruckner, Erbach/Odenwald, Germany, assignor to Bruckner Apparatebau GmbH, Erbach/Odenwald, Germany

Filed May 11, 1972, Ser. No. 252,181
Claims priority, application Germany, May 28, 1971, 7120929
Int. Cl. F26b *25/06*
U.S. Cl. 34—216 8 Claims

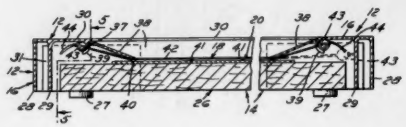


Apparatus for treating textile fabric comprises a housing defining a series of treatment zones maintained at different temperatures and through which the fabric is adapted to be conveyed in succession by conveyors. The zones of lower temperature have conveyors allotted thereto and the zones of higher temperature have other conveyors allotted thereto.

3,812,600
MODULAR CHART

William R. Rondello, 18420 Stephens Dr., East Detroit, Mich. 48021

Filed June 15, 1972, Ser. No. 263,092
Int. Cl. G09b *19/18*
U.S. Cl. 35—7 R 3 Claims

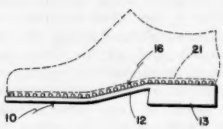


A rigid rectangular mounting panel unit provides a fixed rectangular base to support a markable data sheet which is marginally designated by data insignia in one way or another. This will optionally be in terms of chart-like column or listing headings, or in terms of Cartesian-like coordinates for a proposed graph, or the like. A rectangular extruded grid frame unit is hingedly connected to the mounting panel for swinging movement to and from an operative position in which it parallels the mounting panel in direct juxtaposition thereover; and the vertical and horizontal extrusion parts of the frame uniformly present inwardly extending flange formations defining a rectangular opening to frame the data sheet. Sets of parallel, horizontally and vertically extending grid elements visually subdivide the area of said sheet from top-to-bottom and side-to-side, in suggested minimum spacings of said respective elements from one another of, say, one inch; thus visually outlining spaces at which ascertained graph or chart data may be inscribed on the sheet. For the purpose of affording releasable frame connections of said grid elements, which are preferably of elastic cord material, the respective horizontal and vertical extrusions of the frame have spaced slot and notch formations behind which opposite ends of the stretchable grid elements are releasably anchored under tension, and by which the spacings of said elements are accurately set up and maintained.

3,812,601
BOOT AND SHOE ASSEMBLIES

Thomas Flottorp, 207 Argyle St., Regina, Saskatchewan, Canada

Filed Mar. 5, 1973, Ser. No. 338,142
Int. Cl. A43b *00/00*
U.S. Cl. 36—2.5 C 4 Claims



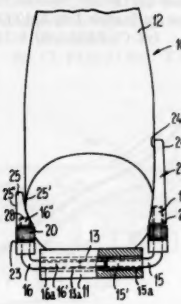
The sole and heel portion of footwear is made of plastic reinforced with steel hooks around the perimeter of the sole detachably engageable by an upper portion by means of a flexible wire attached around the perimeter of the base of the upper portion so that a plurality of sole and heel portions can be provided together with a selection of upper portions all of which can be readily interchanged by the user. The device can be used for boots, shoes, rubbers, overshoes and the like.

3,812,602

SKI BOOT

Ernst Gertsch, Wengen, and Ulrich Gertsch, Interlaken, both of Switzerland, assignors to Gertsch AG, Interlaken, Switzerland

Filed Apr. 9, 1973, Ser. No. 349,465
Claims priority, application Great Britain, Apr. 17, 1972, 17567/72
Int. Cl. A43b 00/00
U.S. Cl. 36—2.5 AL 6 Claims



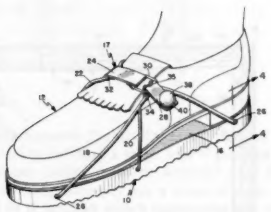
A ski boot wherein at both sides of the upper section bounding the sole there bear impact or abutment plates secured to the sole, which impact plates can be adjusted with regard to their spacing from one another.

3,812,603

DETACHABLE SPIKED SHOE PROTECTIVE COVER

Mallard S. Goodman, 401 E. 17th Ave., Escondido, Calif. 92025

Filed Oct. 9, 1973, Ser. No. 404,347
Int. Cl. A43b 3/10
U.S. Cl. 36—2.5 AN 9 Claims



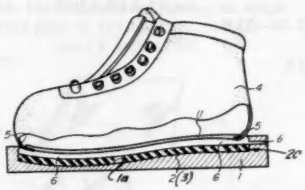
A spiked shoe protective cover having a pad of deformable material shaped to conform to the sole and heel of a spiked shoe and having resilient strap members extending along the sides of said pad from the front to the rear with a central connecting strap that quickly and easily interconnects the strap members to resiliently hold the pad against the shoe sole with the deformable material absorbing the spike or cleat projections from the bottom of the shoe with the pad abutting against a substantial portion of the bottom surface of the show providing maximum support.

3,812,604

SHOE CONSTRUCTION AND METHOD OF MANUFACTURING A SHOE

Tomoyoshi Sato, Tokyo, Japan, assignor to Nihon-Yohin Co., Ltd., Chiyoda-ku, Tokyo, Japan

Filed Aug. 28, 1972, Ser. No. 284,106
Int. Cl. A43c 13/08; A43d 9/00
U.S. Cl. 36—14 8 Claims



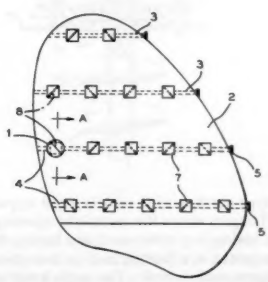
A shoe includes an instep which is joined to a bottom layer by an intermediate layer which is bonded between the instep and the bottom layer. The intermediate layer is advantageously applied in a liquid form after first positioning the bottom layer at the bottom of a mold and positioning the instep so that its lower inturned edges project into the mold. The liquid in the form of a synthetic plastic is permitted to fill the space between the bottom layer and the instep and to be cooled and become bound to these parts. In one embodiment, the bottom layer is advantageously made of an upper and lower superposed layer part with the upper layer having at least one through opening to permit the flow of the intermediate bonding layer therethrough and securement to a recess of the lower part of the bottom layer. In one form the shoe includes a bottom layer made up of upper and lower parts which are joined together by the bonding layer which flows through openings in the upper part into receiving recesses or bores of the lower part. The lower part may advantageously includes a bottom having corrugations or projections and which either includes recesses or receiving bores for the bonding material which extends therethrough.

3,812,605

SPORT SHOE WITH INTERCHANGEABLE GRIPPING ELEMENTS

Berthold Kaestle, Balingen, Germany, assignor to BRS, Inc., Beaverton, Oreg.

Filed July 9, 1973, Ser. No. 377,180
Claims priority, application Germany, July 12, 1972, 2234117
Int. Cl. A43c 15/00
U.S. Cl. 36—67 D 20 Claims



An athletic shoe is described in which the gripping elements or spikes are releasably fastened in recesses in the sole by

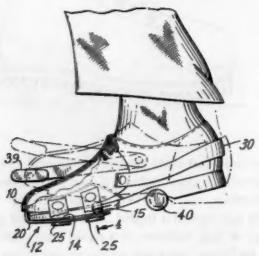
locking pins extending through holes in the base portions of such spikes along lateral passageways provided across the interior of the sole between such recesses.

3,812,606

FOOTWEAR UPPER PROTECTOR FOR CYCLE RIDERS

Vincent Anthony Merola, Box 116 River Rd., West Cornwall, Conn. 06795

Filed Sept. 4, 1973, Ser. No. 394,170
Int. Cl. A43b *13/22*
U.S. Cl. 36—72 R **9 Claims**



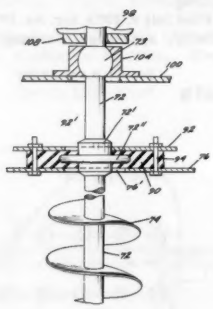
This invention provides a protector for covering the upper portion of, for example, dress shoes against abrasion and indentation of the leather while riding a motorcycle. The invention comprises a sheet of leather or leather-like material, generally conformed to the outline of the forward portion of a shoe from the instep forward to the tip of the toe, and retaining straps designed and adapted to connect the sheet to the shoe by passing under the shoe and rearwardly around the ankle of the wearer.

3,812,607

LATERALLY AND VERTICALLY SHIFTABLE AUGER LOADERS

Howard D. Fenske, 2646 Kenowa, S.W., Grand Rapids, Mich. 49504

Filed Mar. 2, 1973, Ser. No. 337,279
Int. Cl. B60p *1/36*
U.S. Cl. 37—4 **18 Claims**



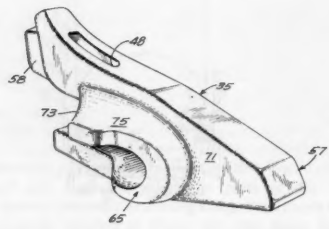
A bowl type earth moving vehicle auger apparatus employing vertical augers above the earth inlet opening and scraper, the augers having free lower ends and having the upper ends specially mounted in a floating fashion to accommodate entry of large objects such as rocks. The auger lower end is laterally controllably shiftable in response to lateral stresses as a result of a special bearing assembly on the auger upper end shaft, and the auger is vertically shiftable in response to vertical stress as a result of the mounting arrangement of the auger framework to the bowl assembly. Also, the auger is vertically shiftable in cooperation with opening of the apron, as a result of the auger framework being specially cooperable with the apron elevating mechanism, to assure free discharge flow from the bowl without auger interference.

3,812,608

DIPPER BUCKET CORNER MEMBER WITH INTEGRAL SHROUD

Thomas A. Ratkowski, Chicago Heights, Ill., assignor to Abex Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 204,965, Dec. 6, 1971, abandoned. This application July 2, 1973, Ser. No. 375,431
Int. Cl. E02f *3/40, 9/28*
U.S. Cl. 37—141 T **3 Claims**



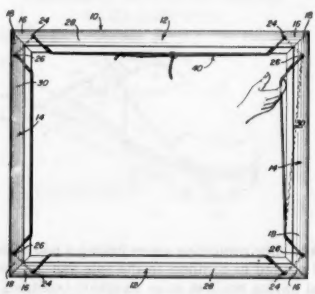
The corners of the lip of a power shovel adjacent the digging edge of the lip are protected by removable guards, more specifically in the form of teeth, and projecting forwardly at each corner; each corner guard preferably includes an integral shroud embracing the portion of the digging edge of the lip which intervenes between the corner and the next adjacent dipper tooth, the latter being of any preferred form. Additionally the guard is so constructed as to present an extension at the rear thereof constituting a portion of the side wall of the dipper.

3,812,609

KNOCKDOWN PICTURE FRAME

Eugene A. Volden, R.R. 2, Henning, Minn. 56551

Filed Feb. 14, 1972, Ser. No. 226,148
Int. Cl. G09f *1/12*
U.S. Cl. 40—155 **7 Claims**



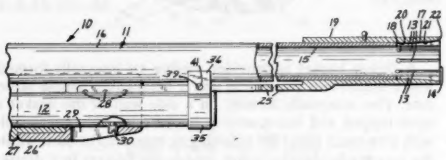
A knockdown picture frame having two perpendicularly arranged pair of opposed frame members, each member having spaced end portions provided with a hole passing therethrough from an opening provided in an outer wall surface to an opening provided in an end wall surface and ar-

ranged to mate with a similar hole in the end portion of an abutting frame member. The frame members are connected together by a longitudinally extending, flexible member passing through the holes and having spaced ends fastened together by a loop formed in one end and a disc provided with a pair of holes. The other of the ends of the flexible member is passed through the holes in the disc, the loop in the one end of the flexible member, and between itself and the disc.

3,812,610
CHOKE MEANS

Jeremiah J. Kranz, 3620 Jefferson, Rapid City, S. Dak. 57701

Filed Mar. 17, 1972, Ser. No. 235,498. The portion of the term of this patent subsequent to Sept. 20, 1988, has been disclaimed.
Int. Cl. F41c *21/00*
U.S. Cl. 42—79 **4 Claims**

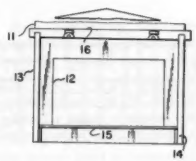


A tubular member having an arcuately diverging convex inner surface coaxially fitted over the arcuately diverging concave outer wall of a slotted portion of a gun barrel in longitudinal sliding engagement therewith for forcing the slotted portion of the gun barrel inwardly to vary the choke thereof and supporting the slotted portion of the gun barrel along substantially the entire length.

3,812,611
ANIMATED CHILDREN'S MARIONETTE THEATRE

Martha Bierwiler, 120 E. Hazel, Orlando, Fla.

Filed May 23, 1973, Ser. No. 363,133
Int. Cl. A63h *33/00*
U.S. Cl. 46—13 **23 Claims**

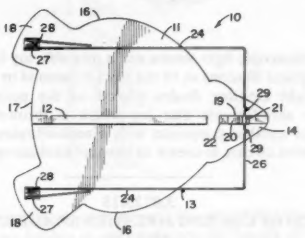


A children's marionnette theatre for self-propelled puppets comprising a housing defining a stage where puppets are displayed and an upper ceiling member disposed over the stage area. The upper ceiling member has a maze of open slots or grooves formed in it through which supporting guy wires for the puppets extend. A self-propelled puppet transport vehicle of the wound mechanical spring or battery operated type is supported on the ceiling member and is designed to run along the pathway defined by the open slots or grooves of the ceiling member with the puppets secured thereto by guy wires extending through the open slots or grooves. In this way the puppet transport vehicle supports and moves the puppet-like figures displayed on the stage. The theatre preferably is collapsible and may employ two-dimensional or three-dimensional puppet figures. The open slots or grooves in the ceiling member preferably are open ended whereby the puppet transport vehicles easily may be loaded on and unloaded from the ceiling member from a side or the back of the theatre. The puppet transport vehicles may be designed to include an additional mechanism for imparting movements to arms, legs, or other members of the puppet like figures, and the theatre is designed to employ one or a plurality of puppets displayed on the stage simultaneously.

3,812,612
TOY GLIDER

Victor Petrusek, 14611 Halsted St., Harvey, Ill. 60426

Filed June 18, 1973, Ser. No. 371,035
Int. Cl. A63h *27/00*
U.S. Cl. 46—79 **8 Claims**

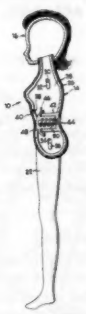


A toy glider made from a light weight material having a substantially flat wing of generally triangular shape, a body which tapers toward the apex, and a landing gear made from a spring wire which is generally U-shaped with the legs fixedly attached to the base of the wing and the bight of the U detachably latched to the apex of the wing so that the legs are normally bowed away from the body. The bight of spring wire is released from the body when the glider lands so that the legs support the body in a generally upstanding position.

3,812,613
EDUCATIONAL FIGURE TOY

Marvin I. Glass, Chicago; Jeffrey D. Breslow, Highland Park, and Eugene Jaworski, Park Ridge, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed May 17, 1972, Ser. No. 253,952
Int. Cl. A63h *11/00*
U.S. Cl. 46—119 **7 Claims**



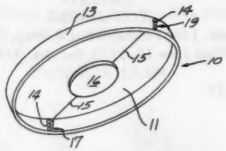
An educational doll which simulates pregnancy including a torso of generally self-supporting material having a yieldable abdominal portion and a plunger movably mounted in the interior of the torso and engageable with exterior drive means for moving the plunger into engagement with, and extending the yieldable abdominal portion of, the torso of the doll.

3,812,614

ROTATABLE STROBASCOPIC TOY

Richard H. Harrington, 313 N. 7th St., Ann Arbor, Mich. 48103

Filed Aug. 21, 1972, Ser. No. 282,392
Int. Cl. A63h 33/26
U.S. Cl. 46—228 1 Claim



A strobascopic light source and a rotatable toy to create exciting optical illusions as to the toy's rotational or lateral motion. Light emitting diodes placed on the periphery of a resilient aerodynamic disc toy which is thrown from one player to another cooperate with a multivibrator type electronic drive circuit, to create an unusual strobascopic effect.

3,812,615

METHOD OF COATING SOIL WITH AN AGRICULTURAL MULCH

Saunders Eliot Jamison, Summit, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed June 1, 1972, Ser. No. 258,561
Int. Cl. C08f 45/24; A01g 7/00
U.S. Cl. 47—9 10 Claims

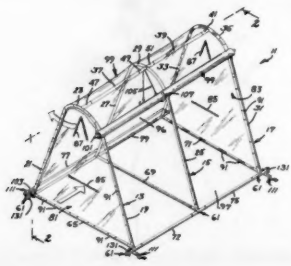
Foamed material suitable for use in connection with agricultural endeavors which is produced by agitating a mixture comprising: (1) a fibrous material, (2) water, (3) a wetting agent, (4) a thickening material, (5) an acrylic polymer emulsion, and (6) a polyepoxide. The foam is then applied onto the surface of the soil where it dries and cures to form an air and water permeable protective coating which retains its structural integrity throughout the growing season and may be broken up and turned into the soil at the beginning of the next season.

3,812,616

PORTABLE GREENHOUSE

Leonard L. Koziol, 1109 18th St., West, West Billings, Mont. 59102

Filed June 26, 1972, Ser. No. 266,291
Int. Cl. A01g 9/00, 13/04
U.S. Cl. 47—17 7 Claims



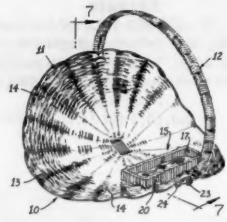
A portable greenhouse is disclosed having a support structure including a plurality of covered sides with one of the sides being movable between a first position for enclosing the greenhouse and a second position when the side is rolled about a roller member for exposing the inside of the portable greenhouse.

3,812,617

FLOWER BASKET WITH WATER RECEPTACLE AND DETACHABLE HANDLE

Ernest O. Brody, Cleveland, Ohio, assignor to Lancaster Colony Corporation, Columbus, Ohio

Filed Jan. 31, 1973, Ser. No. 328,463
Int. Cl. A47g 7/06
U.S. Cl. 47—41 7 Claims



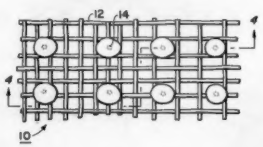
A flower basket is provided having an integrally-formed, water impervious receptacle and a detachable handle structure. The receptacle formed on a side wall of the basket is open-topped and incorporating hooks releasably engageable with wire-mesh cover for retaining a porous florist oasis within the receptacle thereby better supporting flowers in a desired arrangement. The handle is of the bail-type having terminal end portions specifically configured to interlockingly interfit with respective complemental sockets formed at opposed points on the main body of the basket. A base structure is provided to maintain the basket in either an upright position or in a tilted position with the receptacle opening vertically upward.

3,812,618

SEED-FOAM-FABRIC COMPOSITE

Louis L. Wood, Rockville; Clifton L. Kehr, Silver Spring, both of Md., and Kurt C. Frisch, Grosse Ile, Mich., assignors to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 250,012, May 3, 1972, abandoned. This application Mar. 8, 1973, Ser. No. 339,489
Int. Cl. A01g 9/10
U.S. Cl. 47—56 19 Claims



The invention disclosed provides a seed-foam-fabric composite which may be readily applied over a ground area for supporting and protecting seeds during germination.

3,812,619

HORTICULTURAL FOAM STRUCTURES AND METHOD

Louis L. Wood, Potomac, Md., and Kurt C. Frishch, Grosse Ile, Mich., assignors to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 250,012, May 3, 1972, abandoned. This application Aug. 10, 1972, Ser. No. 279,403
Int. Cl. A01g 9/10, 31/00
U.S. Cl. 47—58 21 Claims

The invention disclosed is for horticultural foam structures prepared by reacting an isocyanate capped polyoxyethylene polyol reactant with large amounts of an aqueous reactant containing seeds or the like. Desirably, the aqueous reactant

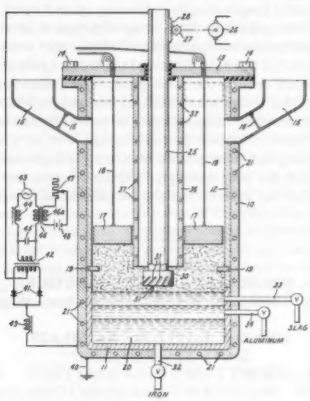
further includes materials useful or necessary for plant growth. The resultant foam structures provide an effective means for protecting dormant seeds as well as means for sustaining seed germination and plant growth.

3,812,620

APPARATUS AND PROCESS FOR SEGREGATING AND DECOMPOSING HETEROGENEOUS WASTE MATERIALS

Charles H. Titus, Newtown Square, and J. Kenneth Wittle, Berwyn, both of Pa., assignors to General Electric Company, Philadelphia, Pa.

Filed Mar. 22, 1973, Ser. No. 343,727
Int. Cl. C10j *3/18*
U.S. Cl. 48—65 **13 Claims**



A method and apparatus for innocuous disposal of heterogeneous solid waste from residential and other sources comprises a pyrolytic furnace having a sump for collecton of molten glass and metal and an elongate electrode having an arcing tip in juxtaposition to the surface of a molten metal pool in the sump. An exhaust passage for gases has an inlet end near the arc. In operation a charge of heterogeneous waste above the metal pool is progressively immersed in the pool wherein organic material is decomposed by pyrolysis and inorganic material is melted into the pool.

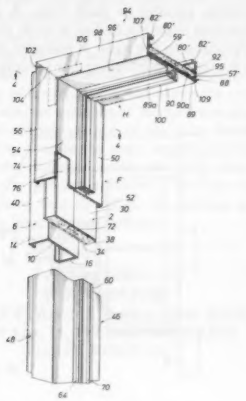
3,812,621

ADJUSTABLE DOOR FRAME ASSEMBLY

Douglas Ragland, Houston, Tex., assignor to Ragland Manufacturing and Construction Company, Houston, Tex.

Filed Nov. 6, 1972, Ser. No. 304,148
Int. Cl. E06b *1/04*
U.S. Cl. 49—505 **18 Claims**

The present invention comprises an adjustable door frame assembly in which the weight of the door is carried by hidden support means rather than the door facing. The support means are enclosed by overlapping L-shaped jamb members which are telescopically adjustable to accommodate walls of varying thicknesses. The interfaces between the adjustable pieces, as



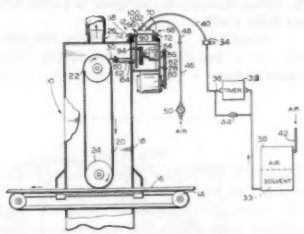
well as the attachment means for attaching said pieces together, are hidden so as to enhance the beauty of the door frame.

3,812,622

SANDER CLEANER

James W. Parsons, P.O. Box 38, Ashland, Oreg. 97520

Filed June 14, 1972, Ser. No. 262,621
Int. Cl. B24b *1/00, 21/18*
U.S. Cl. 51—5 **9 Claims**



A solvent is sprayed onto a moving sander belt by a solvent nozzle moved across the belt in advance of an air nozzle, which blows air onto the belt. The nozzles are directed toward the belt at an angle such that the air from the air nozzle is deflected toward an exhaust port in a sander housing surrounding the belt. The nozzles form a part of a cleaner mounted as a unit on the sander housing, and including a nozzle carriage reciprocating the nozzles across the belt.

3,812,623

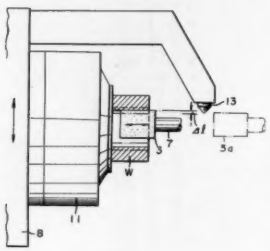
INTERNAL GRINDING MACHINE

Makoto Kikuchi, Kariya; Hiroaki Asano, Chiryu; Ikuo Otsu, Toyoda, and Toyoaki Saeki, Kariya, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Japan

Filed Dec. 29, 1972, Ser. No. 319,760
Claims priority, application Japan, Feb. 10, 1972, 47-14647
Int. Cl. B24b *53/00*
U.S. Cl. 51—5 D **10 Claims**

An internal grinding machine comprising a bed upon which is slidably mounted a work head containing a workpiece to be ground and a table which in turn slidably supports a grinding

wheel head which houses a grinding wheel. The axes of the workpiece and the grinding wheel are parallel to one another and the work head and the grinding wheel head are slidable in directions transverse to such axes while the table is reciprocable in directions parallel to such axes. A dressing tool is pivotably mounted upon the bed so as to be pivotable within a plane perpendicular to the axes. A plurality of feeding means and control means for controlling the feeding means are pro-



vided for selectively and sequentially operating the grinding wheel head and table, as well as the work head and dressing tool whereby the workpiece may be moved toward and away from the grinding wheel, and the grinding wheel may be inserted within and withdrawn from the inner bore of the workpiece and also moved toward and away from the dressing tool, the latter in turn being pivotable toward and away from the dressing station.

3,812,624

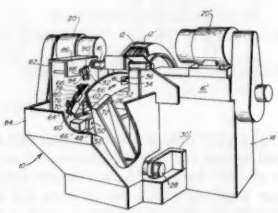
GRINDING APPARATUS WITH INFEED CONTROL

Elman R. Dunn, Roscoe, Ill., assignor to Litton Industries, Inc., Beverly Hills, Calif.

Filed Nov. 14, 1972, Ser. No. 306,309

Int. Cl. B24b *7/16, 51/00*

U.S. Cl. 51—115 **5 Claims**



A grinding apparatus comprising abrasive disc means including at least one abrasive disc, means for mounting the abrasive disc means for rotative displacement about the axis of the abrasive disc means, means for rotationally displacing the abrasive disc means, means for axially displacing the abrasive disc means towards a workpiece surface to be ground, means for mounting a workpiece having at least one surface to be ground by the abrading action of the face of the disc, means for repetitively displacing the mounting means through a first zone wherein only a portion of the workpiece surface overlaps the abrasive disc and through a second zone wherein the abrasive disc completely overlaps the workpiece surface, and means for activating the axially displacing means only when the mounting means is located within the second zone.

3,812,625

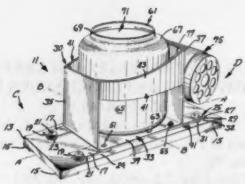
VIBRATING ROCK POLISHER

Wayne L. Olson, Box 9 Keystone Rt., Rapid City, S. Dak. 57701

Filed Mar. 13, 1972, Ser. No. 234,263

Int. Cl. B24b *31/06*

U.S. Cl. 51—163 **5 Claims**



An apparatus is disclosed for polishing rocks in which a rock container is insertable within a frame member which has attached to it a vibrator for imparting a desired motion. Two pair of elongated resilient strips are mounted at an end of each strip in parallel longitudinally extending spaced apart relationship to a base member. Each strip of a pair is in transverse spaced apart relationship to the other. One pair is mounted at a forward end of the base plate and the second pair is mounted at a rearward end of the base plate. The frame member is secured to the unmounted ends of the strips, whereby, the vibrator causes the frame member to move the container in a vertical vibratory motion in conjunction with a rocking motion. A tuning bar is insertable transversely between one pair of strips and the base member in order to vary the resonate frequency of the system and the amplitude of the rock container.

3,812,626

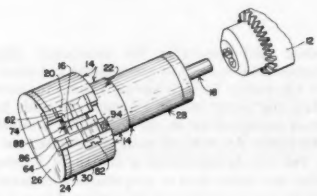
ICE SKATE SHARPENING DEVICE

Arnold M. Thompson, Box 172A Gary Ave., Wheaton, Ill. 60090

Filed Sept. 1, 1972, Ser. No. 285,627

Int. Cl. B24b *9/04, 23/02*

U.S. Cl. 51—170 PT **9 Claims**

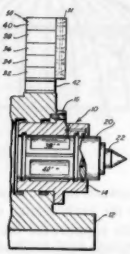


A portable ice skate sharpening device in the form of an attachment for a conventional hand drill and including a rotary abrasive grinding wheel which is enclosed in a casing having formed therein an opening which exposes a limited portion of the periphery of the rotating wheel and renders the same accessible for application thereto of a skate blade. A removable skate blade positioning unit is positioned within the opening and defines a guide slot through which the skate blade to be sharpened is manually guided to draw the edge of the blade progressively and transversely across the periphery of the wheel, the unit being so designed that the lateral thrust which is applied to the blade incident to its contact with the rotating wheel serves to bring the general plane of the skate blade into coincidence with the axis of rotation of the wheel, thus resulting in a hollow ground skate blade edge the radius of curvature of which lies precisely in the midplane of the skate blade.

3,812,627
PRESSURE INDICATING DEVICE FOR HYDROSTATIC BEARINGS

Kurt M. Gebel, and Ralph E. Price, both of Waynesboro, Pa., assignors to Landis Tool Company, Waynesboro, Pa.

Filed Dec. 29, 1972, Ser. No. 319,462
Int. Cl. B24b 41/06; F16c 13/00; G01l 19/12
U.S. Cl. 51—238 R 4 Claims

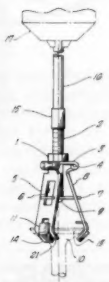


A hydrostatic bearing assembly for a grinding machine comprising a head stock including at least one bearing housing, the bearing housing having a cylindrical bore for receiving a rotatable spindle and a plurality of circumferentially spaced, axially extending pads established in the cylindrical wall of the bore, a corresponding plurality of fluid manifolds, means for establishing parallel fluid flow paths between the plurality of bearing housing pads and the corresponding plurality of fluid manifolds, means for supplying pressurized liquid to the plurality of fluid manifolds and means for sensing when the pressure of the fluid flowing to any one of the plurality of bearing housing pads is less than a predetermined minimum pressure and means for stopping or preventing the operation of the grinding machine when the sensed pressure of the fluid flowing to any one of the plurality of bearing housing pads is less than the predetermined minimum pressure.

3,812,628
PORTABLE VALVE SEAT FACER

Jack Rogers, 6557 Costello Ave., Van Nuys, Calif. 91401

Filed Dec. 20, 1971, Ser. No. 209,670
Int. Cl. B24b 19/00
U.S. Cl. 51—241 VS 7 Claims

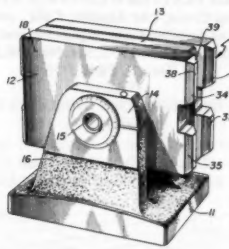


A portable valve seat facer is disclosed having a flexible transmission line assembly, an adjustable mounting assembly and a grinding assembly. The transmission assembly comprises a flexible cable having one end adapted to be placed within a chuck of a hand drill. The other end of the cable is drivingly connected to the mounting assembly. The mounting assembly comprises a ring threadedly mounted on a rod, one end of which is connected to the cable. Three mounting plates are hingeably connected to the periphery of the ring. The proximal portions of the plates include elongated slots for slidably receiving a tongued plate which is fixedly connected to the other end of the rod. The distal portions of the plates are adapted to open and close about a valve head for retaining the valve head in a secured position. The outer extremities of the plates further include means for pivotally receiving the grinding assembly. The grinding assembly comprises a plurality of hooked tabs which are adapted to be removably mounted within a plurality of apertures formed within the extremities of the plates. The interior surfaces of the tabs are adapted to lie flush against the seating surface of the valve head to enable the grinding bits to assume the same angular orientation. The valve stem is then positioned within the valve chamber to act as a guide, with the grinding surfaces of the bits engaging the surface of the valve seat to reface the surface at the same angle as the valve head seating surface.

3,812,629
WORKHOLDER

Peter Campbell, P.O. Box 262, Holden, Mass. 01520

Filed Aug. 15, 1972, Ser. No. 280,899
Int. Cl. B25b 11/00
U.S. Cl. 51—216 R 10 Claims

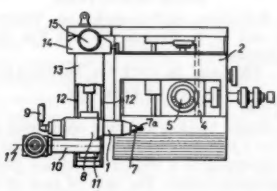


A workholder of the magnetic type having movable magnetic elements to render it selectively either operative or inoperative.

3,812,630
METHOD FOR ADJUSTING MACHINE TOOLS AND CONTROLLING THE MACHINING OPERATION

Alberto Walser, Zollikon, Switzerland, assignor to Albert Walser Prazisionsmechanik & Werkzeugbau, Zollikon, Switzerland

Filed Jan. 17, 1972, Ser. No. 218,444
Claims priority, application Switzerland, Jan. 21, 1971, 907/71
Int. Cl. B24b 3/34
U.S. Cl. 51—281 R 2 Claims



A method of and apparatus for adjusting the substantially cylindrical cutting surface of a machining tool at a machine tool in a predetermined angle at the point of intersection

between a substantially cylindrical surface and a reference surface of the workpiece to be machined, especially a cutting tool, and controlling this angle at the workpiece to be machined with the aid of an optical system, wherein for the control and/or adjustment of such angle the optical axis of the optical system at a carriage also carrying the spindle for the machining tool is displaced such that such optical axis assumes a position corresponding to the working position of the spindle axis. Thus the common carriage for the optical system and spindle and a carriage carrying the clamping mechanism for the workpiece are adjusted relative to one another in two directions perpendicular to one another to such an extent until a reference surface of the workpiece extends substantially parallel to a line of a crosshair of the optical system and the cylindrical surface of the workpiece to be produced coincides with a centering circle of the optical system, which centering circle is analogous to the diameter of the cylindrical cutting surface of the machining tool so that the apex of the angle to be controlled is disposed along a radial line of the centering circle, the angle of which with regard to an adjacent line of the crosshair corresponds to the angle to be controlled and/or adjusted. And after carrying out the control and/or adjustment the spindle is retracted back into its work position.

3,812,631

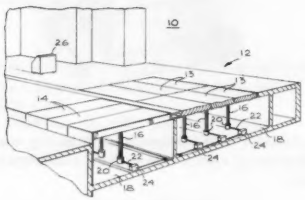
STAGE PLATFORM CONTROL SYSTEM

William Marion Cruse, Los Angeles, Calif., assignor to Henry M. Bissell, Los Angeles, Calif., a part interest

Filed Sept. 19, 1972, Ser. No. 290,337

Int. Cl. E04h *3/26*

U.S. Cl. 52—1 **17 Claims**



A system for controlling the positioning of segmented portions of a theater stage or the like. The stage, including the orchestra pit, is divided into segments, each of which has an independent lift apparatus. The respective lift apparatus are controlled from a console which has the capability of providing control of each lift apparatus individually or, alternatively, interconnecting the drive portions of selected lift apparatus together to a common control module for movement of the corresponding stage segments as a unit.

3,812,632

DOME STRUCTURE

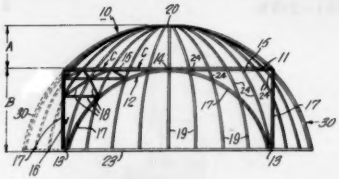
Robert C. Robertson, 1629 Selkirk Ave., Montreal, Quebec, Canada, and G. V. Francis, 60 Hill Top Ave., Cheadle Hulme, England

Filed Aug. 28, 1972, Ser. No. 284,142

Int. Cl. E04b *1/32*

U.S. Cl. 52—81 **10 Claims**

A dome shaped building structure comprising at least three structural arch members which are small circles of a sphere and each extending in a respective vertical plane from two ground anchorage points. The apex of each of the adjacent arch members are interconnected by a horizontal arc shaped member itself a portion of a small circle whereby a continuous ring is formed by the arc shaped members connected to at least three structural arch members. A spherical triangular shaped frame is formed between adjacent apexes and two adjacent structural arch members and extend from one of the anchorage points. At least one of the reinforcing members is a segment of a great circle extending from the arc shaped



member radially outward and downward to connect with the anchorage point or the arch shaped member. These reinforcing members provide support for the vertical load on the arc member between the apex connections.

3,812,633

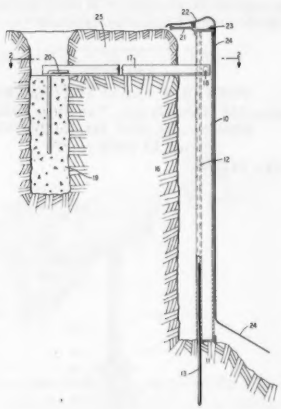
SWIMMING POOL CONSTRUCTION

Vincent Shanni, Scotch Plains, and Emil J. Boassy, Berkeley Heights, both of N.J., assignors to Champion, Inc., Scotch Plains, N.J.

Filed June 8, 1972, Ser. No. 261,077

Int. Cl. E04h *3/16*

U.S. Cl. 52—169 **1 Claim**



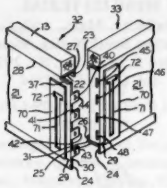
The specification describes a swimming pool construction in which the earth retaining walls that form the pool sidewalls are specially constructed so that the earth adjacent to the sidewall remains substantially undisturbed. The construction uses aluminum panels having integral tubular sleeves extending vertically and spaced apart along the length of the panel. The boss of each panel is anchored into the earth supporting the wall by pins inserted through the sleeves from above and driven into the earth. This eliminates the need for "overexcavating" the pool site. The top of the panels are anchored into the ground with laterally extending braces.

3,812,634

FLASHING BASE WITH ADJUSTABLE CANT

Raymond W. Resech, La Grange Park, Ill., assignor to Pate Manufacturing Company, Broadview, Ill.

Division of Ser. No. 246,565, April 24, 1972. This application June 1, 1973, Ser. No. 366,195
Int. Cl. E04d 13/14
U.S. Cl. 52—741 4 Claims



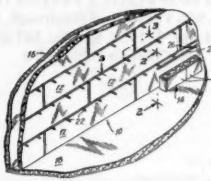
Modular sections of a flashing base, having a cant adjustably attached thereto, may be made either in standard sizes or to order and shipped to site in knockdown and disassembled form. On site, the parts may be assembled and erected in place. The cant may then be moved relative to the deck line to cause the cant to rest upon the deck. Thereafter, roofing felt or similar material may be brought up from the approximately horizontal plane of the deck to the cant and flashing base for a distance of eight inches or more above the deck.

3,812,635

METHOD OF FABRICATING A COMBINATION WATER AND INSULATED WALL ASSEMBLY

Alfred A. Hala, 28 Meeks Ln., Islip, N.Y. 11751

Division of Ser. No. 231,206, March 2, 1972, Pat. No. 3,772,840. This application June 8, 1973, Ser. No. 368,330
Int. Cl. E04b 1/70; H04b 12/28
U.S. Cl. 52—741 17 Claims



A combined insulating and waterproofing apparatus, system and method comprising substantially rectangular shaped blocks of expanded polymeric plastic materials having insulative characteristics which blocks are disposed in predetermined adjacent proximate relationship with one another and positioned between the inner and outer wythes of a wall construction with the horizontal edges of the blocks being angularly inclined in a downward direction as viewed from the inner wythe with respect to the outer wythe.

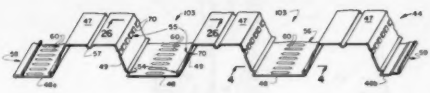
3,812,636

SHEET METAL DECKING UNIT AND COMPOSITE FLOOR CONSTRUCTION UTILIZING THE SAME

Raymond E. Albrecht; Bernard E. Curran, and Robert G. Lindner, all of Sewickley, Pa., assignors to H. H. Robertson Company, Pittsburgh, Pa.

Filed May 26, 1971, Ser. No. 146,989
Int. Cl. E04b 1/16
U.S. Cl. 52—334 16 Claims

A sheet metal decking unit useful in the construction of a composite floor. The sheet metal decking unit exhibits substantial wet strength (ability to support wet concrete between spaced supports); has long span capabilities; and is useful in single and multiple span applications. The sheet metal decking unit presents hold-down elements above and below the geometric mid-plane of the decking unit, and presents shear-resisting elements below the geometric mid-plane, which cooperate in the composite floor construction to achieve the



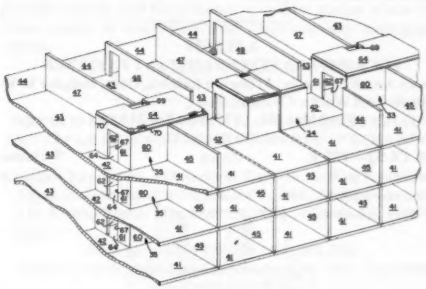
composite load carrying capability of the floor. The decking unit is fully nestable in jam-free relation with others of the decking unit for packaging, storage and shipment. A side joint of the overlap type is provided which is laterally adjustable to facilitate spreading or drawing together of the decking units thereby to accommodate camber or sweep in the decking units, deviations from the specified spacing between the supporting beams, and the like.

3,812,637

METHOD FOR ERECTING A REINFORCED CONCRETE BUILDING

Yue-Chyou Yang, 131 16th Ave., and Jorge de Quesada, 3329 Clay St., both of San Francisco, Calif. 94118

Filed Jan. 3, 1972, Ser. No. 214,647
Int. Cl. E04g 21/00
U.S. Cl. 52—745 13 Claims

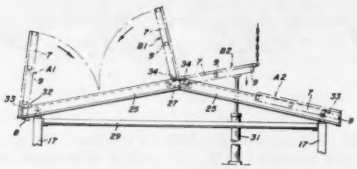


A reinforced concrete superstructure is erected from three principal types of prefabricated elements: (1) rectangular floor slabs, (2) rectangular wall panels, and (3) box units comprising integrally poured vertical walls, preferably integral with a ceiling or floor and having openings through the vertical walls to provide doors and windows and also passages through these or the floor or ceiling for conduits and piping. Typical box units comprise two bathrooms in back-to-back arrangement or two kitchens similarly arranged, but there are other types. The boxes are vertically stacked and, typically, at each level they are erected before the other walls are erected so that they serve as the bracing system for the erection of a keyed construction. Reinforcing rods in the various units are arranged so that they can be structurally joined to each other by simple grouting operation after being set in place.

3,812,638
METHOD OF ASSEMBLING A BUILDING

Adolph F. Lerch, Valencia; Nick C. Otis, Monroeville, and John D. Montgomery, Washington, all of Pa., assignors to Advance Housing Corporation, Wilkins Township, Pa.

Division of Ser. No. 160,846, July 8, 1971, Pat. No. 3,771,269.
This application Mar. 8, 1973, Ser. No. 339,152
Int. Cl. E04b 7/04
U.S. Cl. 52—747 8 Claims

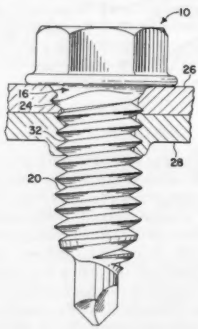


A building is constructed with spaced uprights, each upright having a projecting tongue at the top. Specially formed inverted channel sections set astraddle of these tongues and bolted thereto constitute rafter elements extending crosswise of the building and in gable and hip roofs these rafters slope upwardly from the posts and are joined at the ridge. Prefabricated roof panels have spaced inverted channels that nest over the rafters. The roof panels are lowered into position in a vertical plane, rested edgewise on the rafters and then swung down to rest on the rafters. A gabled roof usually has two panels on each of its two slopes, each panel extending the full length of the roof. The outermost panels on each slope are first put into place and then the inner ones. The lower panels are swung from the vertical plane toward the ridge of the roof and the upper ones are swung down from the ridge toward the eaves to properly overlap. Uprights at the building corners are outwardly-facing angle sections through the flanges of which bolts are passed and screwed into nuts welded on the abutting vertical ends of the end wall panels, after which a cover member is secured in place.

3,812,639
LOCKING AND STRIP-RESISTANT FASTENER

Henry Anton Sygnator, Arlington Heights, Ohio, assignor to Illinois Tool Works, Chicago, Ill.

Filed Mar. 26, 1973, Ser. No. 345,024
Int. Cl. F16b 5/02
U.S. Cl. 52—758 F 7 Claims

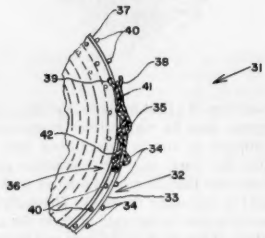


A threaded fastener device provided with a locking section extending from the threaded shank portion to the clamping face of the driving head. The locking section is generally non-circular in cross section and is eccentric to the axis of the fastener providing peripheral surfaces of varying radial distance from the axis of the shank and upon which a partial thread convolution is formed which has a crest diameter greater than the crest diameter of the threaded shank portion.

3,812,640
METHOD AND APPARATUS FOR PACKAGING WIRE MESH MATERIAL

James M. Knott, Wellesley, Mass., assignor to Coatings Engineering Corporation, South Natick, Mass.

Filed Oct. 5, 1972, Ser. No. 295,131
Int. Cl. R65b 63/04
U.S. Cl. 53—14 23 Claims

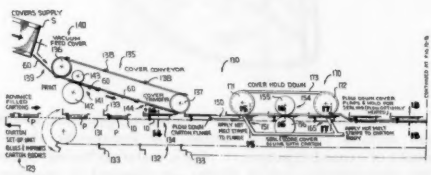


Disclosed is a method and apparatus for rolling wire mesh material such as "hex poultry netting." According to the subject method the mesh material is cut forming an edge defined by a plurality of sharp wire ends. After a roll is formed, the edge is affixed to the body thereof to prevent unrolling and a cover is applied over the wire ends.

3,812,641
METHOD OF FORMING, FILLING AND CLOSING CARTONS, AND SPECIFIC CARTONS THEREFOR

Robert P. Bemiss, 925 Vista Rd., Hillsborough, Calif. 04010

Filed Apr. 3, 1973, Ser. No. 347,411
Int. Cl. B65b 1/00, 61/26
U.S. Cl. 53—14 11 Claims



This disclosure is directed to a novel method of forming, filling, covering and sealing a carton which includes a bottom panel, four upstanding side panels, and a minor flange joined to each of the side panels, a product is packaged within the carton body, and a cover which preferably is post-scored but may be pre-scored is applied thereto and includes four major flanges, one overlying each of the minor flanges of the carton body, the method including the steps of deflecting the minor and major flanges relative to each other to provide an area for the receipt of a hot-melt adhesive, thereafter applying pressure to unite the flanges, and subsequently securing the adhered flanges to the carton side panels. The covers may be individually fed from a stack of blanks, severed from a web drawn from an appropriate roll or as another alternate the carton body and cover would be of an integral one-piece construction.

From a carton standpoint both the carton and cover are preferably coated on each side with an over-all barrier coating of moisture impervious material and minor-flange to major-flange adhesion as well as adhesion of the latter flanges to the side panels is preferably though not exclusively achieved by the use of in-line applied hot-melt adhesives, although adhesive pre-coating may be employed along with other adhesives or equivalents.

3,812,642

METHOD AND APPARATUS FOR PACKAGING A PRODUCT

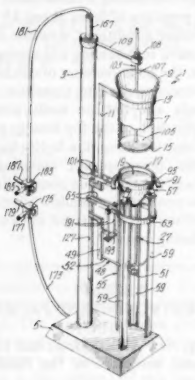
Marcus Mintz, Burlington, Vt., and Bernard H. Engelhardt, Dollard Des Ormeaux, Quebec, Canada, assignors to Industrial Knitting, Inc., Montreal, Quebec, Canada

Filed Dec. 16, 1971, Ser. No. 208,728

Claims priority, application Great Britain, Dec. 21, 1970, 60695/70; Canada, Oct. 1, 1971, 124249

Int. Cl. B65b *9/10, 63/00*

U.S. Cl. 53—21 R **12 Claims**



A method and apparatus for packaging a product with tubular encasing material. A leading length of the encasing material is placed over one end of an open-ended tubular member. The product is inserted through the other end of the tubular member and the tubular member is then withdrawn from the product and the leading length of the encasing material. Additive material can be added to the product before, during or after withdrawal of the tubular member. The tubular member may be employed to package material without a casing by moving it relative to a closure member to form a container and then moving it away from a product inserted in the so-formed product. Apparatus is provided for adding material to a product. The apparatus includes injection members which are open at one end. The one end of the injection members are inserted into a product and then withdrawn while injecting material into the product. The material adding apparatus can be adapted to feed the product into the tubular member. The material adding apparatus could be used in conjunction with the packaging apparatus, with or without casing material, or independently thereof. Apparatus is also provided for moving casing material onto a member such as the tubular member employing stretchable material. The packaging apparatus, employing a casing and the additive apparatus can also be adapted for vacuum packaging.

3,812,643

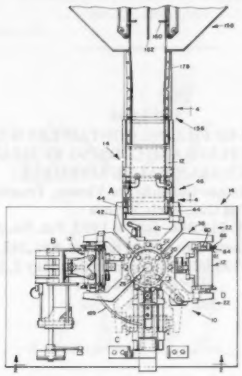
SEMI-AUTOMATIC MACHINE FOR PACKAGING TEA BAGS

Robert W. Vergobbi, Braintree, Mass., assignor to Pneumatic Scale Corporation, Quincy, Mass.

Filed Aug. 31, 1972, Ser. No. 285,187

Int. Cl. B65b *5/06, 63/00*

U.S. Cl. 53—24 **47 Claims**



Apparatus for packaging tea bags distended in part by a non-uniform distribution of tea therein, comprising a rotor on which there is mounted a carton holder for movement from a loading station at which it is adapted to receive and support a carton in an upright position with its upper end open and with a stack of tea bags therein, the collective thickness of which exceeds the depth of the carton with the excess tea bags supported above the open end; to a second station where the carton is vibrated to effect a redistribution of the tea in the tea bags such as to diminish the height of the stack to a dimension no greater than the depth of the carton and where the carton is partially closed; and from thence to a third station where the filled carton is discharged and simultaneously completely closed.

3,812,644

METHOD FOR PACKAGING FLOWABLE MATERIALS AND APPARATUS FOR MANUFACTURING PACKAGING BAGS

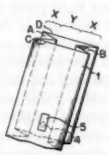
Kousaku Kamikawa, and Seikichi Kawabe, both of Kanazawa, Japan, assignors to Chuba Kikai Co., Ltd., Ishikawa-ken and The Nisseki Plastic Chemical Co., Ltd., Minato-ku, both of, Japan

Filed Sept. 12, 1972, Ser. No. 288,356

Claims priority, application Japan, Sept. 4, 1971, 46-78044

Int. Cl. B65b *43/10*

U.S. Cl. 53—29 **10 Claims**



A method for packaging a flowable material comprising folding a flattened tubular film of a thermoplastic material such as polyethylene so that both sides thereof are folded in-

ward; sealing the thus folded tubular film at the position which is to be the top of the finished package; unfolding the opening of the folded tubular film so that the inwardly folded portions are turned outward and the opening comprises two layers; introducing a flowable material in the thus formed bag; sealing the opening in the two layer state; and pressing flat the two layer sealed end to form a bottom. An apparatus for manufacturing thermoplastic packaging bags to be used for this method is disclosed, too.

3,812,645

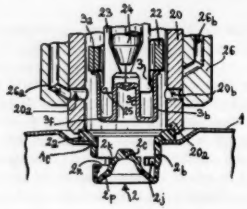
METHOD OF FILLING CONTAINERS WITH PRESSURIZED FLUID AND CLOSING BY MEANS OF A DISCHARGE VALVE ASSEMBLY

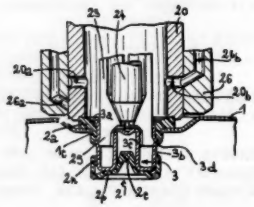
Roger Remane, Sainte-Colombe-les-Vienne, France, assignor to Application Des Gaz, Paris, France

Division of Ser. No. 215,306, Jan. 4, 1972, Pat. No. 3,776,427, which is a continuation-in-part of Ser. No. 886,242, Dec. 18, 1969, Pat. No. 3,735,903. This application May 2, 1973, Ser. No. 356,464

Int. Cl. B65b *31/02*

U.S. Cl. 53—37 **3 Claims**





Method for filling and closing a container filled with a pressurized fluid and closed by a valve, said valve being formed mainly by two pieces, one rigid piece being in the form of a cup embedded inside an aperture of the container above the other piece formed of elastomer material, which, on the one hand, forms a watertight assembly joint by a peripheral portion pressed between rigid cup and the edge of said aperture, and, on the other hand, forms a seat with a central portion applied against an annular portion of the rigid piece; a valve flap between the two said portions which is traversed by at least one porthole for fluid passage; said pieces resting upon the outer wall of container by peripheral superposed flanges, and wherein the flange of the elastomer piece overlaps the outer wall of the container beyond the periphery of the flange of the rigid piece to form around it an annular watertight joint, suitably centered with respect to a tubular filling mouthpiece adapted to be pressed axially against the container.

3,812,646

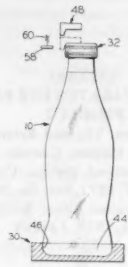
SUPPORTING A THIN WALLED BOTTLE DURING CAPPING

Eugene P. Baldyga, Springfield, Mass., and John E. Griesing, Granby, Conn., assignors to Monsanto Company, St. Louis, Mo.

Filed Mar. 24, 1972, Ser. No. 237,858

Int. Cl. B65b *7/28*

U.S. Cl. 53—42 **5 Claims**



In capping a bottle containing a carbonated beverage capable of generating a pressure of from about 15 to 150 psig depending on temperature conditions, wherein a top load is applied to force a closure into sealing engagement with an end section of the bottle, the improvement of circumferentially enveloping a curved, stress minimizing transition zone in the bottle between the side and bottom walls with a restraining member during application of the top load to prevent outward deflection of the transition zone, the bottle being formed of a high barrier, flexible, thermoplastic material having a wall thickness in the area of the transition zone of between 10 to 35 mils. The apparatus comprises a shallow support member for the lower portion of the bottle to resist outward deflection of the thermoplastic during capping.

3,812,647

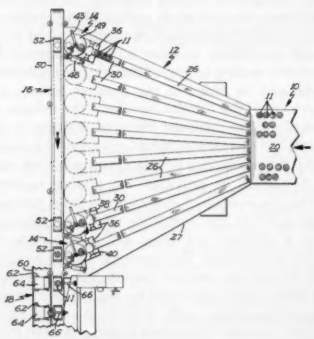
APPARATUS FOR STACKING AND PACKAGING FOOD PRODUCTS

Rudolph B. Bertling, New Albany, Ind., and Edward R. Kerr, Minneapolis, Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Filed Nov. 29, 1972, Ser. No. 310,291

Int. Cl. B65b *57/20*

U.S. Cl. 53—62 **6 Claims**



Flat, disc-shaped food products are packaged by first transferring the products from a continuously moving belt con-

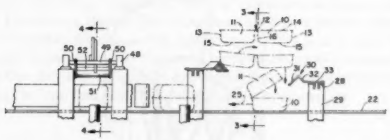
veyor to a group of continuously moving endless spreading conveyors of a smaller width which carry the articles generally in the same direction but are oriented relative to one another in a fan arrangement to spread out the rows of articles laterally. At the ends of the spreading conveyors the pieces drop onto an accumulator table which allows six pieces to be stacked one on top of another. The stack is indexed onto a constant speed turntable which moves the entire stack of six to a predetermined holding station for loading onto a horizontally disposeed bucket conveyor. When one of the buckets comes into alignment with the stack, suitable sensing and actuating means causes the stack to be transferred into the bucket. The bucket conveyor motion is continuous. The buckets, therefore, move sequentially past the turntable loading stations. As each bucket passes the loading station, material is transferred to the bucket only if empty and only if the stack is present in the loading position. Once loaded in the bucket conveyor, the stack is transferred to a carton loading location where an extendable pusher arm engages the stack in the bucket and transfers it to a carton positioned in alignment with the bucket. The carton is then closed and sealed conventionally.

3,812,648

PACKAGE ORIENTING APPARATUS

John Edward Nissel, 1010 Conway Rd., Fredericksburg, Va. 22401

Filed Mar. 13, 1973, Ser. No. 340,647
Int. Cl. B65b *63/02*
U.S. Cl. 53—124 A **5 Claims**



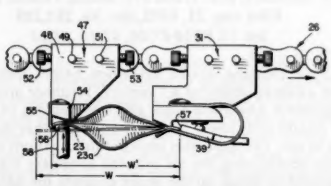
This specification discloses apparatus for orienting packages of frankfurters as they come from a conveyor into condition and position for having a wrapper applied about the contour thereof. The frankfurters are packed in two plastic envelopes, each containing a tier with the two envelopes in end to end relation and connected by an integral hinge. The apparatus which is the subject of this invention receives the connected envelopes from a conveyor, folds them into a two-layer formation, rotates the two-layer formation through 90° in a horizontal plane, and then applies rolling pressure to the upper surface to shape the formation into a compact uniform body for the reception of a wrapper.

3,812,649

AUTOMATIC PACKAGING MACHINES

David Clancy, Canaan, Conn., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Nov. 20, 1972, Ser. No. 307,846
Int. Cl. B65b *43/36*
U.S. Cl. 53—187 **11 Claims**



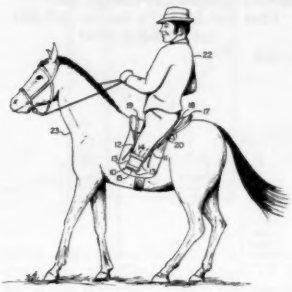
An automatic packaging machine wherein empty envelopes carried by a conveyor are each laterally bowed between fixedly spaced carrier and retainer devices on an endless conveyor to ensure full envelope opening while material is being introduced into the envelope.

3,812,650

SADDLE STIRRUP FOR USE BY A LEG AMPUTEE

Douglas H. Dabney, Grey Gables, Louisa, Va. 23093

Filed May 21, 1973, Ser. No. 362,452
Int. Cl. B68c *3/00*
U.S. Cl. 54—47 **16 Claims**



Saddle stirrups for use by a horseback rider who has had one or both legs amputated. Each stirrup includes a cup in the configuration of a hollow, truncated, open topped, right circular cone. A pair of buckles on the cone mate with a pair of straps which attach to a saddle. The buckles and straps permit adjustment of the length and of the angle of the stirrup cup to suit the rider's needs.

3,812,651

PROCESS FOR SEPARATING GAS BY DIFFUSION

Edward F. Steigelmann, Park Forest, Ill., assignor to Standard Oil Company, Chicago, Ill.

Filed July 19, 1972, Ser. No. 273,215
Int. Cl. B01d *53/22*
U.S. Cl. 55—16 **17 Claims**

There is described the separation of aliphatically-unsaturated hydrocarbons of two to four carbon atoms from gaseous mixtures by the combined use of liquid barrier permeation and metal complexing techniques. The liquid barrier is in contact with a film membrane, and the barrier contains complex-forming metal ions in aqueous solution. The film membrane is contacted with a swelling agent to increase the selectivity of the separation and, preferably, increase permeation by the aliphatically unsaturated hydrocarbon to be separated. The metal ions in the liquid barrier may be, for example, noble metal, nickel, mercurous, cuprous or other metal ions, and mixtures of the metal ions, with or without other cations, may be used. The separation of ethylene from ethane and methane is of particular interest.

3,812,652

PROCESS FOR REGENERATING METAL OXIDES USED IN THE REMOVAL OF ARSENIC FROM GASEOUS STREAMS

Norman L. Carr, The Hague, Netherlands; Franklin E. Massoth, Middlesex Twp., City of Butler, Pa.; Donald L. Stahlfeld, Glenshaw, Pa., and John E. Young, Jr., Middlesex Twp., City of Butler, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Apr. 27, 1972, Ser. No. 247,982
Int. Cl. B01d *53/04*
U.S. Cl. 55—68 **10 Claims**

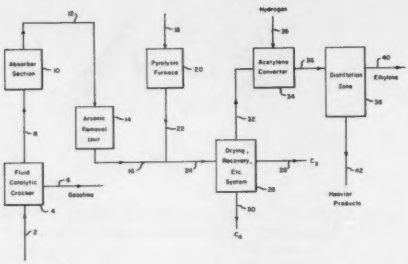
A process for regenerating a metal oxide sorbent used in the removal of arsenic from a gaseous hydrocarbon stream. The

sorbent, usually copper oxide or lead oxide, is contacted with a stream of free molecular oxygen at low temperatures suitably in the range of 150° to 700°F. for a period of from about 2 to about 40 hours.

3,812,653
PROCESS FOR REDUCING THE ARSENIC CONTENT OF GASEOUS HYDROCARBON STREAMS BY USE OF SUPPORTED COPPER OR COPPER OXIDE

Franklin E. Massoth, and John E. Young, Jr., both of Middlesex Twp., Butler County, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Apr. 27, 1972, Ser. No. 247,984
Int. Cl. B01d *53/04*
U.S. Cl. 55—68 **17 Claims**

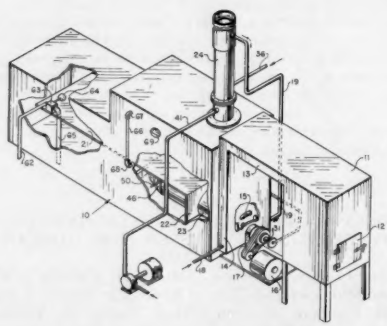


A process for reducing the arsenic content of a gaseous hydrocarbon stream by contacting the stream with a sorbent comprising copper or an oxide of copper dispersed upon a supporting material.

3,812,654
METHOD AND APPARATUS FOR REMOVING PRODUCTS OF COMBUSTION FROM A STREAM OF GASEOUS FLUID

Kenard D. Brown, 1227 S. Willow St., Casper, Wyo. 82601

Filed Mar. 2, 1972, Ser. No. 231,148
Int. Cl. B01d *47/02*
U.S. Cl. 55—92 **30 Claims**



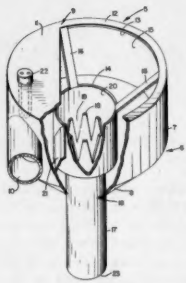
An apparatus for removing particulate matter and other constituents from a stream of combustion products comprises a vacuum pump of the liquid vortex type connected to receive the products of combustion and to drive them through a liquid vortex into a tank of liquid to remove most of the particulate matter; gases are collected above the liquid and are discharged through a liquid and gas treating stack to remove any remaining particulate matter and various other components of the combustion fluid stream. The pump is provided with a two stage rotor, the first stage is the gas compressing and mixing stage and the second stage the liquid vortex stage. Balancing of the pump rotor and minimizing of vibration are facilitated by a pressurized lubricant suspension and distribution system for the rotor shaft and bearings. The apparatus is effective to remove particulate matter and gaseous products from a wide range of combustion product sources and other contaminated gaseous fluid sources.

A gas purifying method is disclosed whereby particulate matter and undesired constituents of the gas are removed by first mixing the gas with water or other liquid and then introducing the mixture to the liquid vortex of a vortex pump, releasing the gas to a body of liquid, maintaining the gas above liquid at a pressure higher than atmospheric, thereafter passing the gas through a column of liquid to maintain the liquid in the column and treat the gas thereby.

3,812,655
GAS-LIQUID SEPARATOR

David F. Bennett, 1100 Fleetwood Ave., Holly Hill, Fla.

Filed Jan. 23, 1973, Ser. No. 326,122
Int. Cl. B01d *45/12*
U.S. Cl. 55—204 **7 Claims**



A device for separating a gas from a liquid having a cylindrical receptacle, an inlet tangentially disposed there to, a centrally disposed down spout entending into said receptacle, a cylindrical baffle surrounding the upper end of said down spout and a vane positioned between the baffle and the receptacle wall for deflecting swirling liquid downwardly and away from the inlet as the liquid completes a revolution of the receptacle.

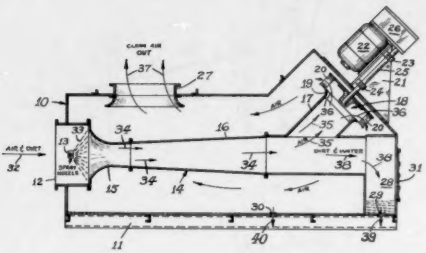
3,812,656
AIR CLEANING DEVICE

John T. Barnhart, R.R. 1, Box 179, Rolling Prairie, Ind. 46379

Filed Aug. 21, 1972, Ser. No. 282,288
Int. Cl. B01d *47/06, 47/10, 47/16*
U.S. Cl. 55—220 **8 Claims**

The air cleaning device described herein uses the well known cleaning ability of a "venturi" scrubber arranged in a configuration which will allow efficient cleaning of dirt laden air at significantly lower horsepowers than other devices currently in use. The apparatus incorporates a venturi nozzle section for accelerating the air into the necessary high velocity component to break up the water droplets for adequate collection of sub-micron particles. By incorporating an efficient regain section on the downstream side of the nozzle and running this regain section directly into the inlet of an un-

housed centrifugal backwardly inclined fan, we are able to fully utilize the velocity already generated and the energy contained within that high velocity air to create an integral venturi fan combination which will operate at significantly lower horsepowers than other devices using separate components. Other aspects of the device include a "Y" separator which removes a large percentage of the water from the water air mixture in the nozzle to further reduce the horsepower consumed in the fan wheel. The clean air passing through the fan



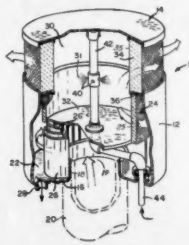
wheel is then discharged into an enclosure which acts as a supporting structure for the entire device. This enclosure offers additional separation of the water mist from the air through possible centrifugal action of the fan wheel within the enclosure. The device then is able to collect air-borne matter using water or other liquids as the collecting media and is able to separate these such that the clean air is discharged for re-use, while the dirt laden water is processed through conventional means for final removal of the original airborne matter.

3,812,657

AIR POLLUTION DEVICE

Leo Kalevi Lampinen, 25 Northy Dr., Toronto, Ontario, Canada

Filed July 6, 1972, Ser. No. 251,368
Int. Cl. B01d *47/06*
U.S. Cl. 55—223 **2 Claims**



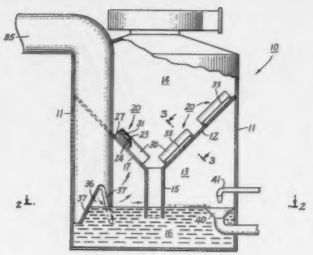
A method and apparatus for scrubbing industrial stack gas streams for the effective removal of pollutants consisting of solid particulate, vapours and mist therefrom comprising subjecting the gas stream to a centrifugal action by a cyclone effect, passing the gas stream through a liquid-wetted filter counter-current to a liquid spray, passing said gas stream through a liquid-mist zone and passing said gas stream through a second liquid-wet filter co-current to a liquid spray, whereby a substantially clean gas stream and a liquid stream containing pollutants are separately discharged.

3,812,658

GAS CLEANING APPARATUS

Orlan M. Arnold, Norwalk, and Carlo A. Vancini, Stamford, both of Conn., assignors to Peabody Engineering Corporation, New York, N.Y.

Filed May 14, 1973, Ser. No. 359,748
Int. Cl. B01d *47/02*
U.S. Cl. 55—239 **6 Claims**



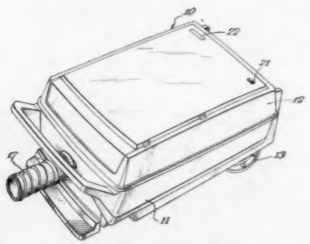
Gas cleaning apparatus comprising a vessel having a moisture eliminator zone and a reservoir to receive the separated liquid. An inlet duct extends into the liquid in the reservoir peripherally of the vessel with a peripheral discharge opening disposed to cause the gases and liquid to rotate in the vessel. The foam is blown away from the opening by the force of the gas flow and is removed in a collecting zone. A separator plate in the liquid below the end of the duct assists in maintaining relatively clear liquid in the zone below the duct and in the path of the discharged gases.

3,812,659

CANISTER VACUUM CLEANER LATCHING MEANS

George A. Westergren, Whitebear Lake; David G. Koland, Sandstone, and Thomas F. Eggert, Richfield, all of Minn., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Aug. 2, 1972, Ser. No. 277,326
Int. Cl. B01d *46/02*
U.S. Cl. 55—375 **17 Claims**

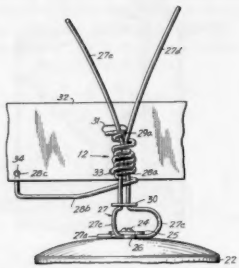


A canister vacuum cleaner having a base and a hood selectively closable on the base. A filter bag for receiving dirt laden air through a hose connected to a pickup wand is retained within the canister by an adapter. A locking member is secured to the base for releasably retaining the filter bag adapter in the canister and for locking a hose latch to the base. A hood latch is further mounted on the base and includes latching means for removably securing the same thereto. The canister and latching means may be formed of molded plastic and cooperatively define a low cost snap-in assembly eliminating the need for conventional fasteners.

3,812,660
FILTER APPARATUS

J. Paul Vandenhoeck, New York, N.Y., assignor to Combustion Equipment Associates, Inc., New York, N.Y.

Filed Jan. 11, 1973, Ser. No. 322,832
Int. Cl. B01d 46/06
U.S. Cl. 55—378 6 Claims

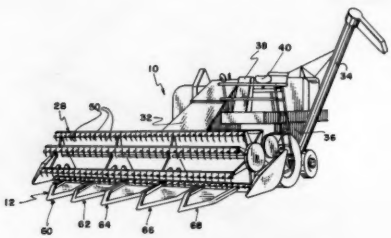


Air carrying particulate matter is directed through rows of filter bags in a bag house. The air is filtered by trapping the particulate matter on the interior walls of the bag, while the filtered air passes through the walls of the bag. The filter bags are adjustably suspended at one end by a spring arrangement which permits the bags to be extended and retracted and fixed at the other end by a collar or ring for installation and servicing.

3,812,661
HARVESTING MACHINE WITH CROP SAVING ATTACHMENT

Clinton F. Baker, R.R. No. 4, Box 49, Fredonia, Kans. 66736

Filed May 1, 1973, Ser. No. 356,163
Int. Cl. A01d 45/02
U.S. Cl. 56—14.4 22 Claims

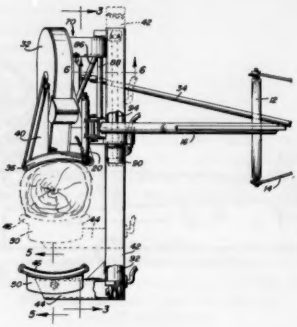


A harvesting machine for row crops including a plurality of transversely spaced catchers extending forwardly and slightly downwardly from above the deck or platform of the machine and over the sickle bar to terminate at a forward end spaced substantially in advance of the sickle bar. Each catcher is mounted for swinging movement about a vertical axis that is substantially in front of the sickle bar, whereby a row of plants is accommodated between and tends to force compliance by swinging alignment of the catchers with the crop row with the catchers lifting fallen or lodged plants and catching inadvertently dislodged plants.

3,812,662
TREE SHAKER WITH TREE EMBRACING CLAMP

Basil W. Savage, Box 38, Madill, Okla. 73446

Continuation of Ser. No. 68,731, Sept. 1, 1970, abandoned, which is a continuation-in-part of Ser. No. 17,083, March 6, 1970, Pat. No. 3,594,999. This application Sept. 29, 1972, Ser. No. 293,464
Int. Cl. A01g 19/08
U.S. Cl. 56—328 TS 4 Claims

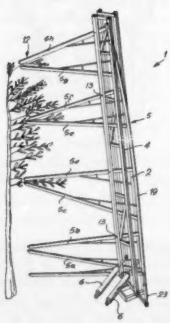


A tractor mounted tree shaker for the harvesting of nuts and the like including power driven rotating weights within a chain suspended casing. The rotating weights set up vibrations which are transmitted to a tree through an enlarged casing mounted pad which engages against the tree by means of clamping apparatus. The clamping apparatus includes a second adjustable pad mounted on a hydraulically controlled arm whereby a clamping of a tree between the pads can be effected.

3,812,663
HARVESTING APPARATUS

John A. Kivlen, Altamonte Spring; Richard L. Orr, Winter Park; William H. Schwab, Fern Park, all of Fla., and George F. Macindoe, New Foundland, N.J., assignors to Ashland Company of N.J, Inc., Newfoundland, N.J.

Continuation of Ser. No. 39,372, May 21, 1970, abandoned. This application Nov. 30, 1972, Ser. No. 310,907
Int. Cl. A01g 19/08
U.S. Cl. 56—328 R 13 Claims



The present invention involves a harvesting apparatus for harvesting the crop from trees or bushes. Generally the harvesting apparatus comprises a movable platform to which an

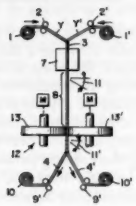
upstanding support is affixed. The support carries an elongate mast provided with rigid extending arms. The arms are injected into the tree or bush in such fashion as to grab the foliage and/or the secondary limbs and a substantially vertical vibratory movement is imparted through the mast and arms to remove the mature crop from the tree without measurably disturbing the immature fruit on the tree or causing any injury to the tree itself.

3,812,664

CONTINUOUS CRIMPING OF YARNS

Heinz Schippers, Remscheid, Germany, assignor to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany

Filed July 26, 1972, Ser. No. 275,174
Int. Cl. D02g *1/02*
U.S. Cl. 57—34 HS **9 Claims**



A process and apparatus for continuous crimping of thermoplastic heat-settable yarns by the pretwisting of separate yarns into a twisted strand which is then continuously pulled apart at one end while using the rotational movement thus imparted to the strand to feed the individual yarns into the other end of the strand under tension, the strand passing through a heat-setting zone to durably crimp the individual yarns before they reach the separation point where they are pulled apart, the invention being essentially characterized by the step or means of frictionally rotatably driving the strand in the vicinity of the point where the yarns are separated at a drive velocity greater than the peripheral rotational velocity of the strand itself. The process and apparatus are especially useful for very high speed continuous crimping in a twist-detwist manner with uniform results.

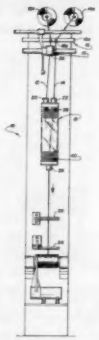
3,812,665

METHOD AND APPARATUS FOR FORMING RANDOM SLUBS IN YARN

Kenneth W. Holland, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 22, 1972, Ser. No. 317,561
Int. Cl. D02g *1/16, 3/34, 3/36*
U.S. Cl. 57—34 B **18 Claims**

Method and apparatus for forming in a yarn random slubs of random length and random diameter at random spaced intervals along the yarn. A slubbing yarn strand at a predetermined percent of overfeed and a core yarn strand under predetermined tension are introduced through separate inlets into one end of a slubbing chamber. The inlet for the slubbing yarn strand is a jet, which introduces into the chamber along with the slubbing yarn strand a first stream flow of compressible liquid. The outlet from the chamber for both yarn strands is a second jet, which introduces into the chamber a second stream flow of compressible liquid, the two stream flows being directed generally toward each other. The stream flows from the jets are adjusted to support the slubbing yarn strand generally free from contact with the chamber wall, and to move the slubbing yarn strand freely about in the chamber relative to the core yarn strand, forming slubs and entwining and entangling with the core yarn strand. The two strands exit together from the chamber through the second jet countercurrent to the second stream flow consolidating the slubbing yarn strand with the core yarn strand, and thus a more unitized yarn bundle is formed.

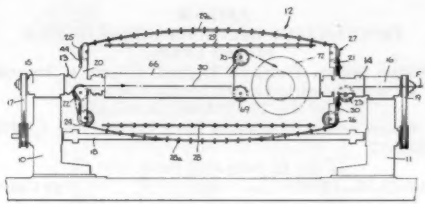


3,812,666

DOUBLE-TWIST STRANDING OR CABLING MACHINE

Marcello Sarracino, Milan, Italy, assignor to Industrie Pirelli Societa per Azioni, Milan, Italy

Filed June 15, 1973, Ser. No. 370,336
Claims priority, application Italy, June 22, 1972, 26026/72
Int. Cl. D07b *3/10*
U.S. Cl. 57—58.52 **8 Claims**



A double-twist stranding or cabling machine in which wires to be twisted pass through a hollow shaft to a pulley on a rotating arm to be twisted, then over a flexible transfer track to a second arm to be returned to a central take-up reel on a rocking cradle while being twisted again. The flexible transfer tracks can be formed by steel ropes which are pulley mounted and spring tensioned to extend from a flat state to a curved state during operation of the machine. This flexibility of the tracks avoids the undesirable bending stresses which affect prior art transfer tracks or arcs, which are relatively rigid and inflexible.

3,812,667

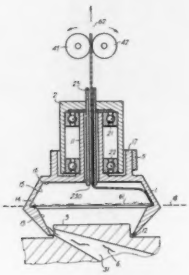
RINGLESS SPINNING OF SEPARATED STAPLE FIBRES

Milan Marsalek; Jan Junek; Vaclav Brynda; Frantisek Burysek; Frantisek Hortlik; Josef Ripka, and Jiri Lanta, all of Usti nad Orlici, Czechoslovakia, assignors to Vyzkumny Ustav Bavlnarsky, Usti nad Orlici, Czechoslovakia

Filed Mar. 6, 1972, Ser. No. 231,833
Claims priority, application Czechoslovakia, Mar. 5, 1971, 1650-71
Int. Cl. D01h *1/12*
U.S. Cl. 57—58.89 **12 Claims**

A rotary spinning chamber is provided having on its inner circumference an annular groove surrounding its axis of rota-

tion and being delimited by two mutually inclined surfaces. Separated staple fibers are admitted into the spinning chamber to form in the recess a sliver having a triangular cross section, a shorter and a longer side of which have a ratio of between 1:1.5 and 1:5. The sliver is withdrawn from the chamber during rotation in such a manner that it will initially



move along an inner surface of the chamber to be imparted twist by friction with respect to the surface, and thereupon along the axis of rotation of the chamber to be imparted additional twist due to the rotation of the chamber with reference to the portion of the sliver which is being withdrawn and thus becomes converted into a yarn.

3,812,668

PROCESSES FOR THE MANUFACTURE OF SLUB EFFECT YARNS

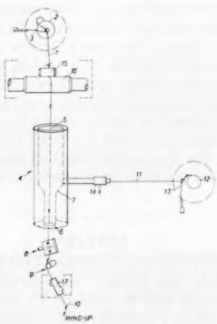
William Wilson, Pontypool, England, assignor to Imperial Chemical Industries Limited, London, England

Filed May 29, 1973, Ser. No. 364,634

Claims priority, application Great Britain, June 5, 1972, 26135/72

Int. Cl. D02g *3/02*; D01h *1/00*

U.S. Cl. 57—157 F **10 Claims**



A method for the preparation of a tension stable slub effect yarn, wherein a core yarn at zero overfeed is fed into a turbulence chamber and an effect yarn is simultaneously injected into the turbulence chamber at 100–120 percent overfeed and permitted to combine with the core yarn and the combined yarn is then intermingled and wound-up.

3,812,669

ELECTRONIC TIMEPIECE

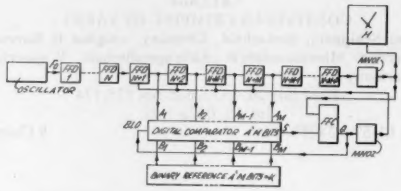
Fridolin Wiget, Neuchatel, Switzerland, assignor to Ebauches S.A., Neuchatel, Switzerland

Filed Apr. 24, 1972, Ser. No. 246,533

Claims priority, application Switzerland, Apr. 22, 1971, 5852/71

Int. Cl. G04c *3/00*

U.S. Cl. 58—23 R **6 Claims**



In an electronic timepiece in which a piezoelectric oscillator acts as a time base and controls a display device through a frequency division chain, the scale of division in the chain is adjustable for regulating the timepiece. A digital comparator compares the logic state of a binary reference with that of specific stages of the division chain, the comparator being alternately blocked during a natural period of the division chain and unblocked during the ensuing period. That ensuing period is cut short and the specific stages of the division chain are reset when there is coincidence between the logic states of the specific stages and the reference.

3,812,670

CONVERTER DRIVE CIRCUIT IN AN ELECTRONIC TIMEPIECE

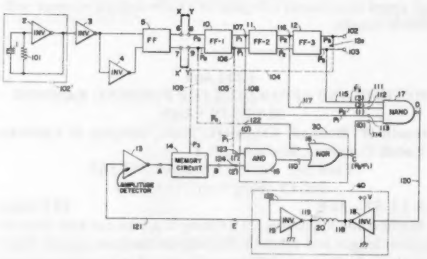
Akira Nikaido; Fumio Nakajima, both of Tokyo; Mitsuo Onda, Omiya; Takayasu Machida, Iruma, and Takashi Toida, Tokyo, all of Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

Filed Sept. 25, 1972, Ser. No. 291,531

Claims priority, application Japan, Sept. 25, 1971, 46-74759

Int. Cl. G04b *1/00*

U.S. Cl. 58—23 R **6 Claims**

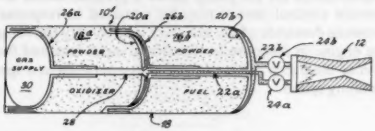


A converter drive circuit in an electronic timepiece movement, which provides pulses of adjustable pulse width to a drive coil of an electro-mechanical converter of the timepiece movement, to thereby generate an induced voltage in the coil and thus drive the time-piece. The drive circuit is designed so as to be able to sense the oscillation amplitude of the converter in terms of electrical voltage, and increase the pulse width of the drive pulses fed to the coil in an abruptly and stepwisely way when an outside mechanical disturbance is applied to the timepiece movement in the reducing sense of the induced voltage in the drive coil.

3,812,671
ROCKET FUEL SUPPLY SYSTEM

John W. Burr; Hans D. Fricke, and Mathew G. Sobieniak, all of Lewiston, N.Y., assignors to Textron, Inc., Providence, R.I.

Filed Aug. 26, 1971, Ser. No. 175,276
Int. Cl. F02c 3/26
U.S. Cl. 60—39.47 4 Claims



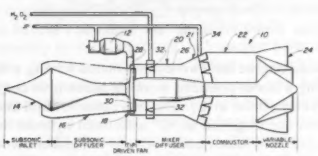
A system for supplying a powdered fuel/oxidizer to rocket engines characterized as including a powdered fuel storage chamber and a system for fluidizing the fuel within the chamber and for forwarding the fuel in a fluidized state from the chamber to the engine. The arrangement permits variable control of fuel feed, as well as restarts of the engine.

In a preferred form of the invention, fluidized fuel is discharged from the chamber through a plurality of outlets arranged adjacent an end of the chamber remote from a fuel follower; the outlets being bounded by additional fluidizing gas admission areas permitting discharge of fluidized fuel through the outlets in a uniform or controllable manner.

3,812,672
SUPERCHARGED EJECTOR RAMJET AIRCRAFT ENGINE

William J. D. Escher, St. Johns, Mich., assignor to CCI Aerospace Corporation, Van Nuys, Calif.

Filed Feb. 10, 1972, Ser. No. 225,255
Int. Cl. F02k 3/04, 3/08
U.S. Cl. 60—244 9 Claims



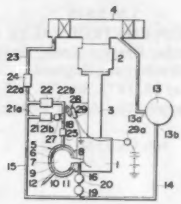
An aircraft engine which employs the use of a high bypass ratio fan and an ejector in combination with a ramjet, the fan being driven by a gas generator associated with the engine, the ejector formed of multiple jet nozzles to supply a monopropellent fluid forward of the combustion chamber of the engine.

3,812,673
FORCED DRAFT COOLING SYSTEM FOR AN EXHAUST GAS PURIFYING DEVICE

Takumi Muroki, Aki, and Tomoo Tadokoro, Kure, both of Japan, assignors to Toyo Kogyo, Ltd.

Filed July 23, 1971, Ser. No. 165,463
Claims priority, application Japan, July 24, 1970, 45-74007; July 31, 1970, 45-76942; July 31, 1970, 45-76943; July 31, 1970, 45-77075; July 31, 1970, 45-77076
Int. Cl. F02b 75/10; F01n 3/10
U.S. Cl. 60—286 32 Claims

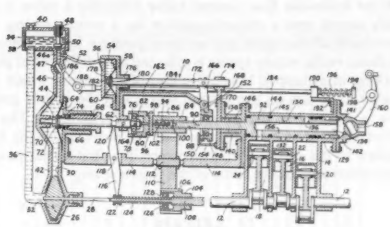
A forced draft cooling system for an exhaust gas purifying device for forcibly cooling the latter without any substantial reduction of the temperature within the interior of the device in which combustion of unburned noxious compounds of an exhaust gas emitted from the exhaust system of an internal combustion engine take place, which comprises means for supplying a cooling air to the surrounding of the device to effect the forced cooling and means for supplying a secondary air to the interior of the device, the supply of said cooling air to the surrounding of the device being effected in association with the supply of said secondary air in response to the engine condition or the temperature of the engine or of the exhaust system. Also provided is a single valve structure into which various valving devices employed are assembled.



3,812,674
ADMISSION CONTROL SYSTEM AND MEANS

Absalom Brown, deceased, late of Haskell, Okla. (by Mary Eleanore Brown, administratrix), assignor to Ellis A. Creek and Frank E. Brown, both of Coweta, Okla., part interest to each

Filed Oct. 13, 1972, Ser. No. 297,405
Int. Cl. F01b 1/02
U.S. Cl. 60—327 10 Claims



A method and means for controlling the admission of any expansive gas under propelling pressure into the power cylinders of reciprocating piston, crankshaft type engines for use in service requiring power at varying speeds and loads. A hydraulic fluid system cooperates with a slidable and rotatable manifold for supplying fuel or any expansive propelling gas to the power cylinders of the engine in a manner for automatically controlling the admission of the gas in accordance with the work requirements of the engine, such as at varying speeds and loads, and particularly to function in two stages. A primary pressure chamber is provided having one side thereof sealed and movable, and a secondary or supplementary pressure chamber is provided also having a sealed and movable side. In the normal primary stage of operation of the engine, the movable side section of the primary pressure chamber is actuated by hydraulic pressure subject to the rotational speed of the engine crankshaft for automatically controlling the starting time, the throttling, the time duration period, and cut-off timing of each admission of the propelling gas into the power cylinders of the engine. During a supplementary, or extra power stage of operation of the engine, the movable side section of the secondary pressure chamber is actuated by supplementary hydraulic pressure subject to both rotational

speed of the crankshaft and the regulation of the circulation of liquid being bled from the primary chamber. The secondary pressure chamber automatically and independently affects only the extra power throttling, duration period and cut-off timing of each admission of propelling gas.

3,812,675

HYDRAULIC FLOW CONTROL VALVE ASSEMBLIES

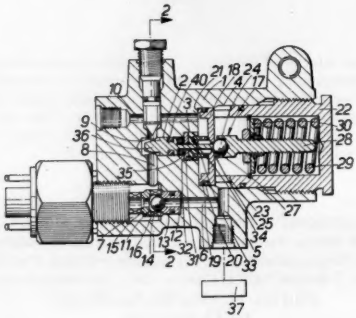
Robin Adam Cochrane, Haseley Knob, England, assignor to Girling Limited, Birmingham, England

Filed May 30, 1972, Ser. No. 257,786

Claims priority, application Great Britain, June 1, 1971, 18236/71

Int. Cl. F15b 1/02

U.S. Cl. 60—413 **6 Claims**



In an hydraulic flow control valve assembly a valve is normally urged into a closed position by a return spring, and movement of the valve into an open position in opposition to the force in the return spring is effected by a differential piston working in a stepped bore. The end of the piston which is of smaller area acts on the second valve, and the end of greater area is exposed to the pressure in an inlet passage. The differential piston is operative to open the valve when the force applied to the piston by the pressure in a first outlet passage overcomes at least the force of the return spring.

3,812,676

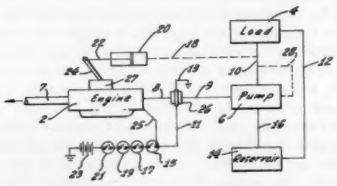
NOISE REDUCTION APPARATUS AND METHOD

Fred T. Smith, Dearborn Heights, Mich., assignor to Sargent Industries, Inc., Los Angeles, Calif.

Filed July 24, 1972, Ser. No. 274,798

Int. Cl. F16h 39/46

U.S. Cl. 60—431 **39 Claims**



An apparatus and method for operating an auxiliary hydraulic load at low noise levels. A pump having a capacity which is sufficiently large to supply the load with the necessary volume of hydraulic fluid at relatively low pump speeds is driven by an engine operating at a speed near its idling speed. Throttle control means control the fuel supply to the engine at a level sufficient to drive the pump while maintaining the engine speed near its idling speed. When the engine speed is increased to a predetermined level in excess of its idling speed, means are provided to maintain the output from the pump at or below a predetermined flow rate to not overload the pump means or the auxiliary load. The pump may include a variable displacement pump or a plurality of fixed displacement pumps with means to vary the pump output in response to the pressure demand from the auxiliary load to maintain the torque input requirements for the pump below a predetermined level. The throttle control means may be actuated in response to the pressure demands of the auxiliary load to vary the torque from the engine in response to the torque input required for operation of the pump while the engine is operating at a speed near its idling speed.

3,812,677

HOT GAS ENGINE WITH CO-AXIAL CYLINDER BORES OF DIFFERING DIAMETER

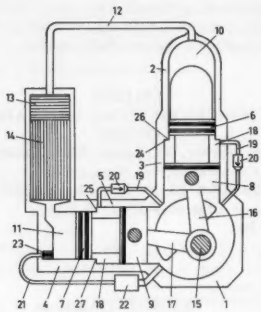
Ingemar Greis, Malmo, Sweden, assignor to Kommanditobolaget United Sterling (Sweden) AB & Co., Malmo, Sweden

Filed Dec. 15, 1972, Ser. No. 315,479

Claims priority, application Great Britain, Dec. 21, 1971, 59267/71

Int. Cl. F02g 1/04

U.S. Cl. 60—517 **6 Claims**



A Stirling engine has two cylinders one having a higher and one having a lower pressure working space interconnected by a regenerator cooler array. The two cylinders and accompanying pistons are disposed at 90° with each cylinder having coaxial bores and associated pistons of different diameters separated by shoulder surfaces having sharp edges. A crankcase is disposed adjacent the larger diameter bores of both cylinders. A space between the two cylinders is connected to the crankcase by a conduit including a non-return valve, and the crankcase is connected to the lower pressure working space by a conduit with a restricted area orifice or a non-return valve.

3,812,678

CONTROL VALVE

Roger E. Doerfler, Detroit, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

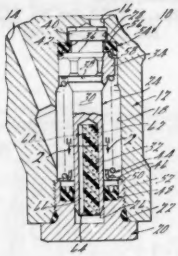
Filed Feb. 5, 1973, Ser. No. 329,396

Int. Cl. F16k 31/363

U.S. Cl. 60—591 **21 Claims**

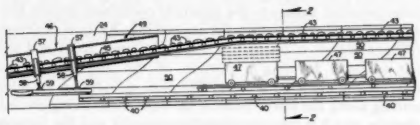
A fluid pressure control valve for controlling the flow of fluid from a fluid source to some predetermined destination, the valve including first and second chambers, an inlet communicating fluid from the source to the first chamber and an outlet communicating fluid from the first chamber to the destination, means including a movable valve member within the first chamber operative to reduce the fluid pressure transmitted to the outlet relative to the inlet, means sealingly en-

gaging the valve member for preventing fluid from passing from the first chamber into the second chamber, and means



for preventing any fluid passing around or through the sealing means from the first chamber into the second chamber from affecting normal operation of the valve member.

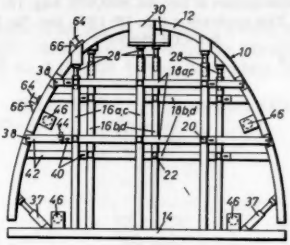
3,812,679
TUNNEL LINING AND METHOD OF APPLYING
Werner A. Ruemmele, 950 E. 1217 N., Bountiful, Utah 84101
Filed Aug. 8, 1972, Ser. No. 278,811
Int. Cl. E21d *11/00*
U.S. Cl. 61—42 **3 Claims**



A lining for a cylindrical tunnel is constructed by applying to the tunnel wall a multiplicity of panels of reinforced concrete which are substantially longer than they are wide. The panels comprise peripheral segments with straight side edges and helical end edges and are individually applied and secured directly to the tunnel wall with anchor bolts, in a helical pattern. The circumferential extent of each panel is preferably in the range of 50° to 70°. Length and helix angle are so chosen that the advance for one full turn is equal to the length of a panel. The boring machine bores in increments of predetermined length and grippers are then moved forward and re-set. When the advance of each panel is about equal to one boring advance, one panel may be put in place during each boring cycle. The longitudinal edges of the panels are formed with grout flow channels and inlet and outlet ports communicate with the channels to supply grout to the cavity between the lining and the tunnel wall to form a permanent lining.

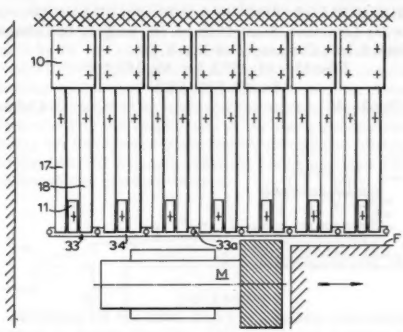
3,812,680
SHIFTABLE SUPPORT FOR USE IN TUNNELS, MINES AND THE LIKE
Heinz-Theo Walbrohl, Nordstrasse 73, Bonn, Germany
Filed Apr. 29, 1971, Ser. No. 138,705
Claims priority, application Germany, May 4, 1970, 2021734
Int. Cl. E21d *19/00*
U.S. Cl. 61—45 C **30 Claims**

A shiftable support for use in tunnels, mines and the like. A plurality of longitudinally arrayed supporting frames is connected by connecting means, which connects at least alternate ones of the frames to form them into units. Displacing means displaces the supporting frames individually or the units with reference to one another, between a supporting position and a shifting position in which the respective frames or units are advanced in forward direction. Operating means decreases the dimensions of the frames in a plane transverse to the direction



of advancement preparatory to displacement to the shifting position, and increases the dimensions upon displacement from the shifting position to the support position.

3,812,681
MINE ROOF SUPPORTS
Archelaius Dawson Allen, Preston, England, assignor to Gullick Dobson Limited, Wigan, Lancashire, England
Filed July 11, 1972, Ser. No. 270,617
Claims priority, application Great Britain, July 16, 1971, 33424/71
Int. Cl. E21d *15/44*
U.S. Cl. 61—45 D **5 Claims**

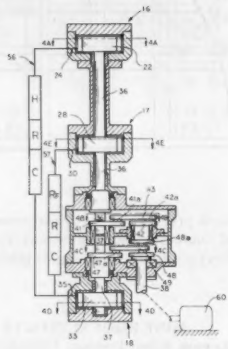


Advancing means of a self-advancing mine roof support, or a part of the support which is moved thereby, is connected to or carries a section of rail adapted when advanced to register or line-up with a similar and separate section of rail connected to or carried by the advancing means, or a part moved thereby, of a neighbouring or adjacent support. The section of rail may be provided with means for temporarily connecting it to a neighbouring or adjacent section of rail. The sections of rail may serve as a means for connecting one support to a neighbouring or adjacent support so that one support will provide an effective abutment or anchorage for the advance of the other or a part thereof. The section of rail may include or be in the form of a spill plate or baffle. The spill plates or baffles, which are moved forwardly individually by the advancing means of their supports, then form a continuous barrier or wall in front of the supports and serve to prevent mineral spilling into the supports.

3,812,682
THERMAL REFRIGERATION PROCESS AND APPARATUS

Kenneth P. Johnson, 124 Castle Crest Rd., Walnut Creek, Calif. 94529

Continuation-in-part of Ser. No. 850,439, Aug. 15, 1969, abandoned. This application Apr. 19, 1971, Ser. No. 135,490
Int. Cl. F25b 9/00
U.S. Cl. 62—6 38 Claims

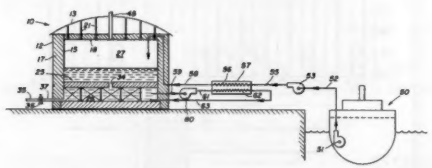


Process and apparatus for producing refrigeration, or refrigeration and work directly from thermal energy. The thermal energy input can also be supplemented by work input to enhance the refrigeration effect.

3,812,683
METHOD FOR STORING A SUBCOOLED LIQUID

Royce Jay Laverman, South Holland, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed May 15, 1972, Ser. No. 253,110
Int. Cl. F17c 5/02
U.S. Cl. 62—45 8 Claims



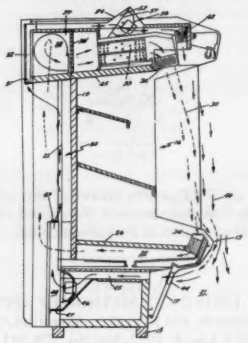
An enclosed cryogenic storage tank having an insulated bottom, a vertical insulated wall projecting upwardly from the bottom, an insulated roof projecting to the wall and completely covering the space surrounded by the wall, and an insulated deck inside and extending across the tank at a fixed location between the tank bottom and tank roof.

A process of removing a subcooled liquefied gas from the space beneath an insulated deck in an insulated cryogenic storage tank, feeding the removed subcooled liquefied gas in heat exchange with a stream of warm liquefied gas of the same composition as the subcooled liquefied gas to cool the warm stream, returning the subcooled liquefied gas to the tank below the deck, and feeding the cooled stream of liquefied gas to the tank above the deck. Alternatively, a stream of the subcooled liquefied gas can be mixed with the steam of warm liquefied gas and the combined stream then fed to the tank above the insulated deck.

3,812,684
REFRIGERATED DISPLAY CASE

Grant M. Brown, Atlanta, Ga., assignor to Kysor Industrial Corporation, Cadillac, Mich.

Filed Dec. 7, 1972, Ser. No. 312,977
Int. Cl. F25d 17/06
U.S. Cl. 62—89 13 Claims

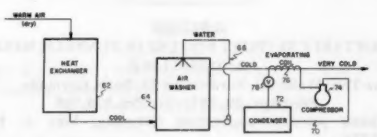


A refrigerated display case includes an open front permitting customer access to the products contained therein and rear doors permitting access for restocking. An inner curtain of refrigerated air is circulated across the open front and adjacent surfaces forming a portion of the display case to refrigerate the contents therein. The case includes an air inlet extending along the lower front of the case for drawing cooled air therein which is then circulated rearwardly and discharged upwardly adjacent the exterior surface of the rear doors to prevent condensation thereon. The air stream adjacent the doors is then circulated over the top of the case and across the front of the case to form a guard curtain adjacent and outside the inner curtain of refrigerated air.

3,812,685
AIR CONDITIONING PROCESS

Ted R. Brown, 1212 Princeton Ave., Salt Lake City, Utah 84105

Continuation-in-part of Ser. No. 172,968, Aug. 19, 1971, abandoned. This application May 11, 1973, Ser. No. 359,368
Int. Cl. F25d 17/06
U.S. Cl. 62—93 2 Claims

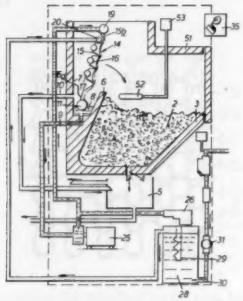


A process for efficiently conditioning air for beneficial use by sequentially cooling dry air in three distinct steps, e.g., precooling the air out of the presence of moisture, adiabatically cooling the air in the presence of moisture, and refrigerating the air to finally cool the air and coincidentally condense excess moisture.

3,812,686
ICE MAKING APPARATUS

Colin Alfred Tester, Maidstone, England, assignor to Winget Limited, Rochester, Kent, England

Filed Jan. 12, 1973, Ser. No. 322,910
Int. Cl. F25c 1/12
U.S. Cl. 62—180 8 Claims

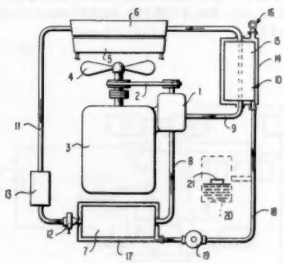


An ice-making machine by which batches of pieces of ice are made repeatedly automatically relies on the flow of water over a freezer surface to make the ice. The water is pumped from a trough that initally contains a predetermined volume of water, and water not retained by the freezer surface flows back into the trough. When the level in the trough has fallen to a predetermined value, a level responsive device puts the pump temorarily out of action and operates means for causing the ice to fall from the freezer device. The trough is automatically replenished so that it again contains the predetermined volume of water and the cycle is repeated.

3,812,687
AIR CONDITIONING SYSTEM FOR COOLING THE INTERIOR SPACE OF MOTOR VEHICLE

Albert Stolz, Pfrondorf, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Oct. 6, 1972, Ser. No. 295,700
Claims priority, application Germany, Oct. 6, 1971, 2149819
Int. Cl. F25b 27/00
U.S. Cl. 62—323 10 Claims

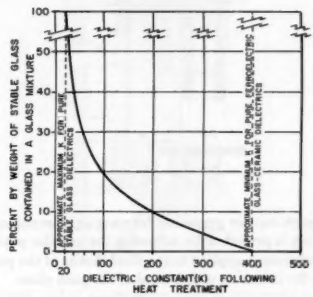


An air-conditioning system for cooling the interior space of motor vehicles which consists of a compressor, of a condenser cooled by a cooling air stream as well as of an evaporator coordinated to the interior space of the motor vehicle, in which the cooling medium flowing from the compressor to the condenser in the form of hot gases is cooled prior to the entry into the condenser by means of a cooling-medium-water-heat-exchanger traversed by at least a portion of the hot gas line from the compressor to the condenser.

3,812,688
FRIT CAPACITOR AND METHOD FOR OBTAINING THE DIELECTRIC CONSTANT THEREOF

John W. Asher, Elmira, and Andrew Herczog, Painted Post, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 71,750, Sept. 14, 1970, Pat. No. 3,753,057, which is a division of Ser. No. 729,800, May 16, 1968, Pat. No. 3,699,620. This application Mar. 30, 1973, Ser. No. 346,594
Int. Cl. C03b 23/20, 29/00; C04b 35/26
U.S. Cl. 65—18 3 Claims



A frit capacitor of either the discrete or integrated microcircuit variety having a ferroelectric glass-ceramic dielectric whose dielectric constant is of intermediate value between about 20 and 400. The desired value of dielectric constant is accurately obtained in a readily reproducible manner by mixing a batch containing appropriate quantities of stable non-crystallizable glass particles and glass particles capable of forming a ferroelectric crystal phase. The desired dielectric constant is obtained by subjecting the batch to heat treatment. By controlling the weight ratio of the two glass components during the batch preparation, individual capacitor dielectrics having different dielectric constants can be provided utilizing the same firing schedule for each.

3,812,689
METHOD OF MAKING GLASS-CERAMIC ARTICLES

Richard F. Reade, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed May 26, 1972, Ser. No. 257,324
Int. Cl. C03b 29/00
U.S. Cl. 65—33 3 Claims

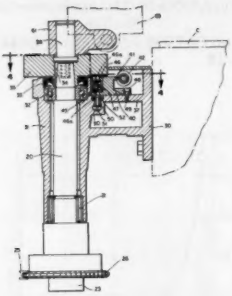
This invention relates to the production of glass-ceramic articles having compositions within the Li_2O-Al_2O_3-SiO_2 field which are modified through the addition of ZnO in combination with a second metal oxide (R_mO_n) selected from the group consisting of SrO, BaO, Y_2O_3, La_2O_3, and mixtures thereof. When nucleated with TiO_2, beta-spodumene solid solution crystals are formed as the predominant crystal phase with minor amounts of such secondary crystal phases as gahnite, rutile, or anatase, and complex crystals associated with the second metal oxides also being present. The resultant products exhibit low coefficients of thermal expansion and excellent creep resistance up to temperatures of 1,000°C. and higher. This desirable combination of properties can frequently be achieved where the heat treatment to produce the glass-ceramic body is of relatively short duration.

3,812,690

ADJUSTABLE AIR-CYLINDER SUPPORT FOR 90° PUSH-OUT IN GLASSWARE FORMING EQUIPMENT

Alphonse W. Faure, Philadelphia, Pa., assignor to C.S.S. Machine and Tool Company, Inc., Philadelphia, Pa.

Filed May 23, 1973, Ser. No. 362,917
Int. Cl. C03b 9/40
U.S. Cl. 65—260 7 Claims



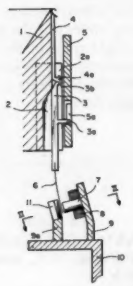
In a 90° push-out for glassware forming equipment, a rotary slide assembly is provided for adjusting the angular position at which air pressure is applied to the fluid motor of the push-out mechanism for initiating withdrawal of the push plate.

3,812,691

JACK AND NEEDLE ACTUATOR FOR A CIRCULAR KNITTING MACHINE

Werner Engelfried, Sindelfingen, Germany, assignor to C. Terrot & Soehne, Stuttgart, Germany

Continuation-in-part of Ser. No. 864,402, Oct. 7, 1969, abandoned. This application Sept. 20, 1971, Ser. No. 182,082
Int. Cl. D04b 15/78
U.S. Cl. 66—50 R 4 Claims



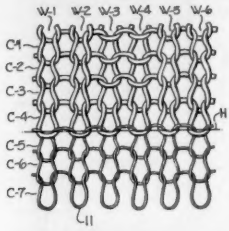
A selected jack and needle of a circular knitting machine are rapidly and positively positioned into and maintained in their operative knitting or non-knitting positions during the associated knitting cycle in response to a momentary control pulse applied to an actuating electromagnet. A magnetizable spring member is drivingly connected to the jack and is mechanically biased into one of two extreme positions corresponding to the knitting or non-knitting positions of the jack. When the momentary control pulse is applied, the actuating electromagnet initially overcomes the force of a permanent magnet which is maintaining the spring in the mechanically biased condition and thereby switches the spring into an opposite position. At the conclusion of the control pulse the spring is prevented from returning to its bias position until the end of the associated knitting cycle by a cam member.

3,812,692

KNITTED EDGING FOR A FABRIC OR GARMENT

Werner Arndt, Geitbeck 2, 5870 Hemer, Germany

Filed Feb. 15, 1972, Ser. No. 226,616
Claims priority, application Germany, Feb. 18, 1971, 2107722; Aug. 28, 1971, 2143225
Int. Cl. D04b 9/46
U.S. Cl. 66—172 R 8 Claims



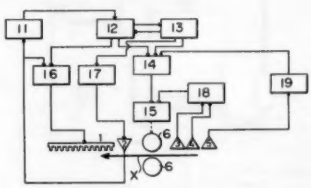
The knitted edging is adapted to form the trim along the edge of a garment and is folded lengthwise with opposite edge portions straddling the portion of the garment to which it is to be attached. The edging has a non-raveling selvedge along one edge and the opposite edge portion has a course of stitch loops which will ravel. An adjacent pair of courses of stitch loops is spaced inwardly from the ravel edge and are knit to face in opposite directions providing a hinged fold line to cause the portion of the edging from the ravel edge to the fold line to fold inwardly against the back side of the edging so that it may be easily attached to the garment with a line of stitching. The ravel edge is then positioned under one side of the edging material and is protected and hidden from view.

3,812,693

AUTOMATED STEEL SECTION ROLLING CONTROL SYSTEM AND METHOD FOR OPERATING SAME

Yoshiro Kamogawa, Sakai, and Takao Tuchiya, Osaka-fu, both of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Dec. 11, 1972, Ser. No. 314,263
Claims priority, application Japan, Dec. 11, 1971, 46-99846; Dec. 11, 1971, 46-99847; Dec. 11, 1971, 46-99848
Int. Cl. B21b 37/10
U.S. Cl. 72—13 10 Claims

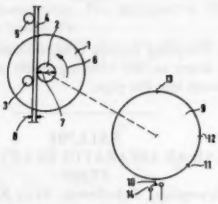


Automated control system for a steel rolling operation which comprises the cooperation of a means for calculating the steel rolling temperature, a means for preparing a pass schedule for the rolling based upon the temperature calculated, a means for setting up a roll pass in each individual rolling pursuant to the schedule prepared, and a means for effecting the rolling of the steel rolling section.

3,812,694
BENDING MACHINE FOR METAL RODS

Paul Carl Peddinghaus, Kornerstrasse, 5820 Gevelsberg, Germany

Filed Nov. 30, 1971, Ser. No. 203,340
Claims priority, application Germany, Nov. 30, 1970, 2058793
Int. Cl. B21d 7/024
U.S. Cl. 72—21 6 Claims

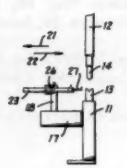


A bending machine for bending metal rods having a rotatable bending plate which carries a centrally disposed bending tool and at least one eccentric bending tool, means being provided for continuing angular movement of the rotatable bending plate beyond a nominal angular position in order to compensate for spring-back of a metal rod after a bend has been effected, there being impulse transmitting means actuable on rotation of the bending plate, means for counting impulses transmitted by said impulse transmitting means and means for comparing such transmitted impulses with a number of impulses pre-set in said counting means. The rotatable bending plate continues beyond the nominal bending angle by the provision of delay means which delay by a pre-selected variable period the moment at which the number of transmitted impulses corresponds to the number of impulses pre-set in the counting means. The period of said variable delay is proportional to the value of the nominal bending angle, the value of the ratio of the diameter of the centrally disposed bending tool to the diameter of the rod being bent and a factor, dependent upon the hardness of the rod, lying between 0.004 and 0.008.

3,812,695
BACK GAUGE FOR PRESS BRAKE

Gerald V. Roch, New Augusta, Ind., assignor to Hurco Manufacturing Company, Inc., Indianapolis, Ind.

Continuation of Ser. No. 41,138, May 25, 1970, abandoned.
This application June 21, 1972, Ser. No. 264,867
Int. Cl. B21d 43/26
U.S. Cl. 72—36 24 Claims

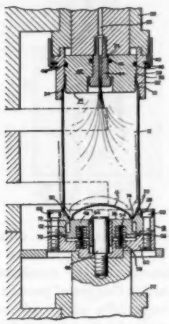


A pair of horizontally spaced supports behind a press brake bed holds an elongated gauge bar adjacent the press brake dies. The gauge bar is pivotally mounted to the supports and suitably counter-balanced to permit upward pivoting for clearance of return flanges formed in the stock. Pivoted gauge fingers can be quickly secured to the gauge bar at any point and are pivotable upwardly to clear return flanges, the pivots being spring-loaded detents facilitating choice of orientation of finger gauge face.

3,812,696
METHOD OF AND APPARATUS FOR FORMING CONTAINER BODIES

Raymond H. P. Kneusel, Flourtown, Pa., and Vinson S. Potts, Cherry Hill, N.J., assignors to Crown Cork & Seal Company, Inc., Philadelphia, Pa.

Continuation of Ser. No. 82,986, Oct. 22, 1970, abandoned.
This application Oct. 30, 1972, Ser. No. 302,479
Int. Cl. B21d 41/04
U.S. Cl. 72—57 20 Claims

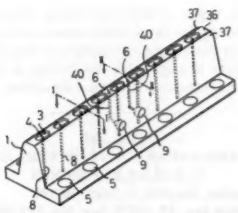


The open end of a container body is deformed by a die having a passageway connected to a source of air under pressure. As the die approaches the open end, the air under pressure passes through the die and into the container to depress a central container supporting surface with respect to a peripheral positioning surface. At the time the die engages the open end, the peripheral positioning surface has properly guided the container body into alignment with the die. The air under pressure continues to enter the container as the die forms a seal with and deforms the open end in order to prevent collapse of the container body.

3,812,697
METHOD AND AN APPARATUS OF LEVELING A METAL STRIP

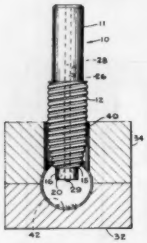
Kiyoshi Kawaguchi, Kudamatsu; Yasunori Miyamatsu, Yokohama; Arao Kamoi, Kudamatsu, and Kinya Fukuda, Yokohama, all of Japan, assignors to Toyo Kohan Co., Ltd., Tokyo, Japan

Filed Feb. 5, 1973, Ser. No. 329,310
Int. Cl. B21d 11/02
U.S. Cl. 72—60 11 Claims



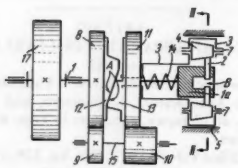
An apparatus for leveling a metal strip wherein the strip is made to travel along an elongated guide mounted on a bed The guide has an outwardly tapered elongated central section with a plurality of guide capillaries and a flat portion at the top of the guide with recesses in the flat portion around each of the capillaries. The moving strip is supported on a fluid fed through the capillaries and is not in contact with the guide flat portion.

3,812,698
SPIN-FLANGING TOOL
Edwin Henry Stock, St. Louis, Mo., assignor to Intertherm, Inc., St. Louis, Mo.
Filed Mar. 5, 1973, Ser. No. 338,166
Int. Cl. B21d 22/14
U.S. Cl. 72—71 8 Claims



A tool forms an externally flanged hole, either in ductile flat sheet metal or tubes, by a single downward rotating stroke. Circular slugs are removed and the resultant circular edges spun upward and outward in flanges of precise inner and outer diameter. The tool is especially useful where T-connections are to be brazed to the wall of a ductile metal tube.

3,812,699
WORKING HEAD OF A ROTARY SWAGING MACHINE
Oliver Augustovich Koost, Ulitsu Vyarsi, 31 kv 1, and Kheino Ioanovich Bezzubov, Ulitsa Pelguranna, 51 kv 3, both of Tallin, U.S.S.R.
Filed June 4, 1971, Ser. No. 150,123
Int. Cl. B21j 7/16
U.S. Cl. 72—321 2 Claims

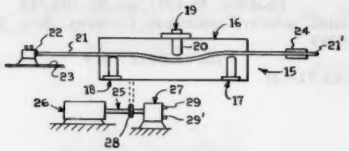


In the head, taper rollers are freely mounted on axles secured in a casing for their independent rotation as strikers roll over them in the course of rotation of the arbor which has a kinematic drive linkage with the casing to impart thereto reciprocatory movements in the axial direction.

3,812,700
METHOD AND APPARATUS FOR STRAIGHTENING TUBULAR ELEMENTS
Herbert D. Horton, Mayhill, N. Mex. 88339
Filed Jan. 22, 1973, Ser. No. 325,686
Int. Cl. B21d 3/06
U.S. Cl. 72—79 6 Claims

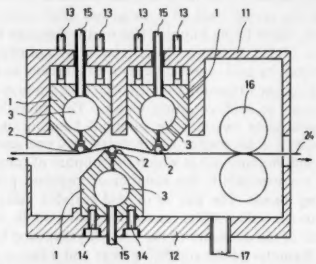
Method and apparatus for straightening tubular elements, such as crooked pipe, comprising an elongate frame upon which a pipe coupling apparatus is slidably disposed for longitudinal movement. Rotatably mounted to the frame and generally spaced from the coupling apparatus is a pipe deforming device for inducing a localized rotating bending moment into the pipe.

The pipe deforming apparatus comprises opposed pipe engaging members which are mounted within a rotatable drum



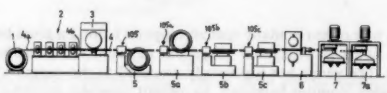
so that pipe coupling means longitudinally moves the pipe through the drum as the rotating drum imparts a localized bending moment into the pipe.

3,812,701
METHOD AND AN APPARATUS OF LEVELING A METAL STRIP
Yasunori Miyamatsu, Yokohama; Arao Kamoi, Kudamatsu, and Kinya Fukuda, Yokohama, all of Japan, assignors to Toyo Kohan Co., Ltd., Tokyo, Japan
Filed Dec. 14, 1972, Ser. No. 315,108
Int. Cl. B21d 1/02
U.S. Cl. 72—163 5 Claims



A method of working a thin metal strip comprising the step of: passing the metal strip along an elongated flat support having a thin roll thereon while pressing the thin roll against the strip by passing a pressurized fluid along the bearing surface between the support and the roll.

3,812,702
MULTI-PASS METHOD AND APPARATUS FOR COLD-DRAWING OF METALLIC TUBES
Helmut Benteler, Im Buchenwald 1, Bielefeld; Franz-Josef Hartmann, Dalheimer Weg 10, Paderborn, and Heinz Hefendehl, Im Quinhagen 10, Scholb Neuhaus, all of Germany
Filed June 26, 1972, Ser. No. 265,969
Claims priority, application Germany, June 26, 1971, 2131874
Int. Cl. B21c 3/16, 1/12
U.S. Cl. 72—283 7 Claims



Metallic tubes are cold-drawn by being pulled through a series of swiveling reducing dies each followed by a motor-driven wheel around which the tube forms at least one con-

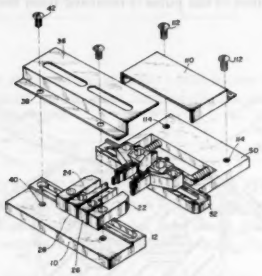
volution. The speed of the motors is regulated to insure that the tube is subjected to tensional stresses downstream as well as upstream of each die. The tensional stressing upstream of the dies reduces the resistance which the tube offers to a reduction of its diameter and/or wall thickness during passage through the dies.

3,812,703

ADJUSTABLE DIE PAIR FOR CUTTING AND FORMING AXIAL LEADS OF ELECTRICAL COMPONENTS

Leonard Tepper, Langhorne, Pa., assignor to Henry Mann, Inc., Huntingdon Valley, Pa.

Filed Apr. 26, 1973, Ser. No. 354,897
Int. Cl. B21f *45/00*
U.S. Cl. 72—326 10 Claims



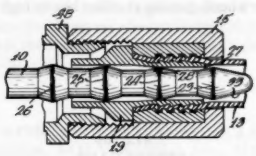
This invention pertains to an adjustable die pair for cutting and forming the leads of axial lead components. As reduced to practice, in one embodiment the same die is adapted to form a lead component at as little as 3/10 inch pitch or as great as two inch pitch of wire centers. The die pairs comprise opposed sets of fingers carried on opposed base members. The fingers retained on each die may be readily adjusted without removing the base from the press or ram to which they are attached.

3,812,704

APPARATUS FOR MAKING UP AN EXPANDABLE INSERT FITTING

Leonard J. Kowal, Prospect Heights, Ill., assignor to Imperial-Eastman Corporation, Chicago, Ill.

Division of Ser. No. 127, Jan. 2, 1970, Pat. No. 3,665,591. This application Mar. 17, 1972, Ser. No. 235,728
Int. Cl. B21d *41/02*
U.S. Cl. 72—392 3 Claims



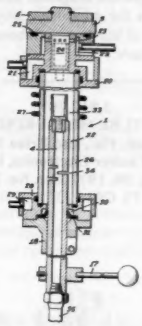
A method of making-up a fitting having a deformable insert adapted to be disposed coaxially within a tube end. The insert is expanded by a punch having spaced annular swaging portions of progressively increasing diameter whereby successive enlarging operations are effected as a result of an axial movement of the punch through the insert. The punch includes a shaft with the annular swaging portions being formed integrally with the shaft. The enlarging portions may be uniformly axially spaced to assure the action of only a single swaging portion on the insert at a given time.

3,812,705

DEVICE FOR DEGASSING A SAMPLE

Pierre Boillot, Le Pecq, France, assignor to Institut De Recherches De La Siderurgie Francaise, Saint Germain en Laye, France

Filed Aug. 7, 1972, Ser. No. 278,208
Claims priority, application France, Aug. 12, 1971, 71.29507
Int. Cl. G01n *7/00*
U.S. Cl. 73—19 8 Claims



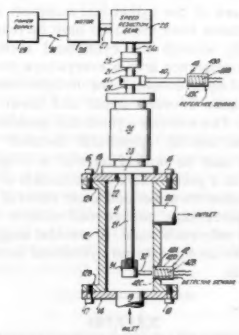
Device for degassing a sample and measuring the gas therein having a vertically movable chamber for the sample which in its upper sample loading position includes actuating means to flow a curtain of protective gas therearound and further includes carrier gas flowing through the chamber in both the upper loading position and the lower testing position.

3,812,706

CONSISTOMETER

Kenneth O. Higgs, Port Neches; Robert C. Richmond, and Lawrence F. Marsch, both of Port Arthur, all of Tex., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 10, 1971, Ser. No. 206,717
Int. Cl. G01n *11/14*
U.S. Cl. 73—59 33 Claims



An apparatus for continuously measuring the consistency of a stream of material, such as grease, comprising a resilient member located in the stream so that the two surfaces about which it is flexible are parallel to the direction of the flow of the material in the stream. Means are provided for rotating the resilient member at a constant rate about an axis which is parallel to the direction of flow of the stream. Means are provided for measuring the reaction forces exerted on the

resilient member as it rotates by determining its condition of flexure, said means including a relatively rigid reference member and means for rotating the reference member in synchronism with the resilient member, together with means for periodically detecting the relative positions of the resilient member and the rigid reference member as the resilient member is rotated in the stream of material. In one embodiment, the rigid reference member and the resilient member are mounted to a common shaft and their relative positions determined periodically as the two members are rotated at a constant rate past respective magnetic detectors coupled to an electric circuit means for measuring any time displacement between the passage of the two members as they travel past their respective detectors.

3,812,707

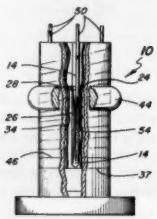
HEMATOCRIT TUBE MEASURING APPARATUS

Oscar Proni, Hollywood, Fla., and Brian S. Bull, Loma Linda, Calif., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed Aug. 30, 1972, Ser. No. 285,051

Int. Cl. G01n *15/04, 33/16*

U.S. Cl. 73—61.4 **33 Claims**



A central cylindrical member has axially extending grooves opening to its circumferential surface and means for frictionally holding hematocrit capillary tubes inserted into the grooves. A transparent coaxial cylindrical tubular member is telescoped over the central cylindrical member and has a scale with a reference area provided thereon so that the hematocrit tubes can be aligned with chosen locations circumferentially along the reference area. The reference area has indicia establishing a lower limit which substantially lies in a plane normal to the axis of the cylindrical members and an upper limit whose distance from the lower limit increases uniformly circumferentially around the cylindrical members in one revolution. The reference area is everywhere divided into the same number of equal divisions, the division dimensions varying as the distance between upper and lower limits of the reference area. The exterior cylindrical member is rotatable relative to the central cylindrical member so that the reference area may be moved relative to a spun down hematocrit tube at a point where the contents of the tube are subtended between the upper and lower limits of the reference area so that percentage packed cell volume may be read directly on the reference scale. A toroidal magnifier may be coaxially slidable on the exterior cylindrical member to aid in reading the scale.

3,812,708

METHOD AND APPARATUS FOR TESTING WHEELS AND DEFECT DETECTION IN WHEELS

John Vincent Cowan, Danbury; Gerald DeG. Cowan, New Preston, and John Gerald Cowan, Southbury, all of Conn., assignors to Scanning Systems, Inc., Danbury, Conn.

Filed Nov. 17, 1971, Ser. No. 199,487

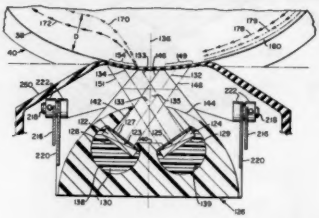
Int. Cl. G01n *29/04*

U.S. Cl. 73—67.5 R **45 Claims**

Wheel testing apparatus according to the invention comprises at least one search unit positioned "in-track" replacing a portion of a rail so that the gauged wheels of a passing railroad train roll thereover. Each search unit has a thin vertical rail aligned with the gauge edge of the track for supporting each passing wheel adjacent to its flange, and thereby exposing the running surface of the wheel for testing in a zone which does not interfere with the wheel's path.

Each search unit has two ultrasonic transducers enclosed in a flexible fluid-filled boot and are positioned adjacent to the thin vertical rail in the test zone under the running surfaces of passing wheels, the fluid-filled boot providing good ultrasonic coupling therewith.

The transducers are angled and opposed; ultrasonic energy pulses are refracted substantially tangent to the wheel and thereafter travel about the periphery of the wheel in opposite directions, depending on which transducer is pulsed. The pulse travels around the wheel and returns to the search unit, where a portion of the pulse is returned from the wheel to the



second transducer confirming the presence of the pulse in the wheel and halting further pulsing of the first transducer. The returned pulse also is used to adjust the amplified gain of the output of the first transducer, which is monitored for echo pulses reflected from defects in the surface of the wheel. The travel time of pulses around the wheel is measured to indicate wheel size.

A wear measurement is made by measuring the time interval between the time for the pulse to travel about the periphery of the running surface and the time for the pulse to travel about the larger diameter flange.

Outputs from the electronic test circuit include a defect alarm signal, an excessive wear alarm signal, a wheel size indication, and a test certification signal. These outputs trigger pressurized color-coded paint sprays for marking the wheels if they are passing at low speed, or terminals for connection with automatic car identification systems for recording information relating to the wheels passing at either low or high speed.

3,812,709

STRESS GAGE

Robert W. Benson, and James Ronald Chapman, both of Nashville, Tenn., assignors to Thermo Electron Corporation, Waltham, Mass.

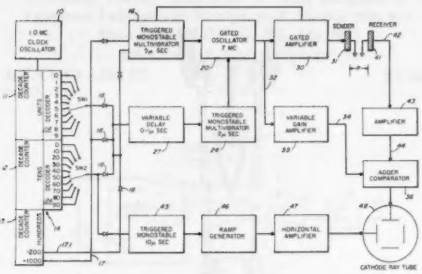
Filed Feb. 9, 1972, Ser. No. 224,794

Int. Cl. G01n *29/04*

U.S. Cl. 73—67.5 R **11 Claims**

This application discloses a system for non-destructive measurement of stress in metallic specimens by use of elastic wave energy, preferably shear or surface waves in the ultrasonic frequency range. More particularly, there is described a measuring technique using either type of wave according to which

the relative transit times for the ultrasonic waves over a fixed path length and along two principal axes of stress are determined with a precision equal substantially to one nanosecond. A self-contained stress gage instrument for practising the procedure is disclosed.



3,812,710

ELECTRONIC FUEL CONSUMPTION METER

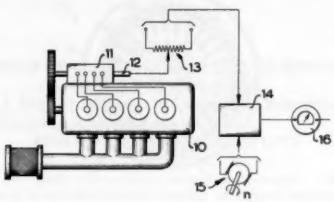
Gunther Bauman, Stuttgart; Peter Schmidt, Schwieberdingen; Hermann Eisele, Ditzingen, and Josef Wahl, Stuttgart, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed July 7, 1971, Ser. No. 160,302

Claims priority, application Germany, July 9, 1970, 2034067

Int. Cl. G01l *3/26*; **G01m** *15/00*

U.S. Cl. 73—114 **24 Claims**



Electric signals, corresponding to two or more engine operating parameters, such as rotational speed of the engine drive shaft and the setting of the throttle valve or a rotational speed and the pressure in the intake manifold or the pressure in the intake manifold and the setting of the throttle valve, are obtained by transducers, these signals being fed to an evaluating circuit that produces an electric output that is conducted to a meter that reads fuel consumption in unit distance, or unit time, travelled.

3,812,711

ENGINE EFFICIENCY DETERMINING APPARATUS

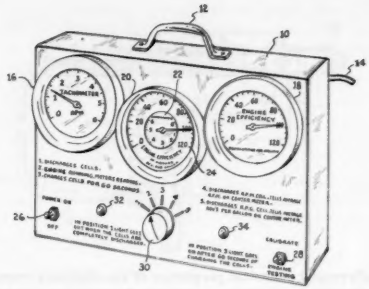
Perc C. Sorenson, 1431 Underwood Ave., Milwaukee, Wis. 53213

Filed Sept. 20, 1972, Ser. No. 290,450

Int. Cl. G01m *15/00*

U.S. Cl. 73—114 **9 Claims**

In accordance with the present invention, apparatus is provided for determining instant readings of revolutions per minute (r.p.m.) and engine efficiency (ratio of fuel input to engine revolutions) and an averaged reading of r.p.m. and engine efficiency. The apparatus provides electrolytic cells forming a first energy reservoir into which energy is introduced proportional to the r.p.m. of the engine and a second energy reservoir into which energy is introduced proportional to engine efficiency, for a predetermined length of time. The introduced energy is then extracted from the reservoirs while a corresponding registration is obtained, such registration thereby being an average of engine r.p.m. and of engine efficiency under the given operating conditions.



3,812,712

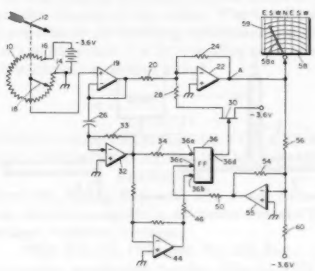
WIND DIRECTION MONITOR SCALE CONVERTER

Philip A. Hoffman, and Frederick K. Davey, both of Baltimore, Md., assignors to The Bendix Corporation, Southfield, Mich.

Filed Apr. 9, 1973, Ser. No. 349,136

Int. Cl. G01f *13/02*

U.S. Cl. 73—188 **9 Claims**



A wind vane drives a movable contact of a voltage divider comprised of a 360° potentiometer. The movable contact is connected into a voltage summing point in an electrical circuit which responds to a discontinuity in the potentiometer output to add or subtract a voltage at the summing point to compensate for the discontinuity. In addition, at one end of the electrical range of the circuit a voltage equivalent to 360° of vane rotation is provided at the summing point to reposition the electrical sum to a value intermediate of its range, while the potentiometer discontinuity is arranged to occur at the other end of the electrical range of the circuit.

3,812,713

METHOD AND APPARATUS FOR MEASURING THERMAL PROPERTIES OF A FLOWING MEDIUM

Stig Ingvar Karlsson, Karlskrona, Sweden, assignor to AB Svensk Varmemätning CB System, Bramma, Sweden

Filed May 25, 1972, Ser. No. 256,925

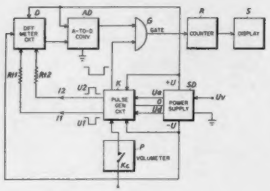
Claims priority, application Sweden, June 9, 1971, 7441/71

Int. Cl. G01k *17/10*

U.S. Cl. 73—193 R **7 Claims**

In a method for measuring thermal properties in a flowing medium, a single voltage pulse is applied to two spaced tem-

perature dependent elements in the medium immediately after a certain volume of the flowing medium has been measured.



The differential electrical properties of the elements responding to the differential temperature are then used to give an indication of the thermal properties of the medium.

3,812,714

METHOD AND DEVICE FOR MEASURING THE FLOW RATE OF AN INTERMITTENT FLUID FLOW

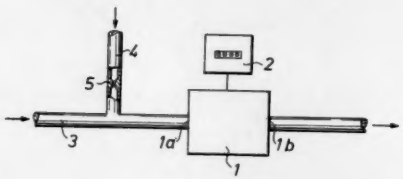
Sven Olofsson, Jarfalla, and Jan Tysk, Ekero, both of Sweden, assignors to LKB Medical AB, Bramma, Sweden

Filed May 17, 1973, Ser. No. 361,160

Claims priority, application Sweden, May 23, 1972, 6710/72

Int. Cl. G01f *1/00, 3/00*

U.S. Cl. 73—194 R **2 Claims**



A method of measuring the instantaneous volumetric flow rate of an intermittent or pulsating fluid flow comprises the steps of employing a flow meter unsuitable for measuring flow rates below a given threshold value, adding to the intermittent fluid flow to be measured a second fluid flow having a known flow rate exceeding the threshold value of the flow meter, supplying the resulting combined fluid flow to the flow meter and subtracting from the measuring output of the flow meter a value corresponding to the known flow rate of said second fluid flow, whereby a measuring output is produced representing the instantaneous volumetric flow rate of the unknown intermittent fluid flow.

3,812,715

VARIABLE-AREA FLUID FLOWMETERS

Francis Cuthbert Whalen, London, England, assignor to Elliott Brothers (London) Limited, Chelmsford, England

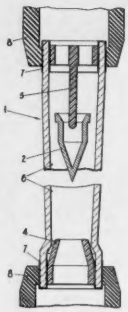
Filed Aug. 9, 1972, Ser. No. 279,192

Claims priority, application Great Britain, Aug. 12, 1971, 37979/71

Int. Cl. G01f *1/00*

U.S. Cl. 73—209 **9 Claims**

A fluid flowmeter of the tapered tube and float type wherein the internal surface of the tube is provided with an electrically conductive coating and the tube carries a terminal whereby the coating may be grounded, thereby preventing the appearance of any electrostatic charge on the inner surface of the tube.



3,812,716

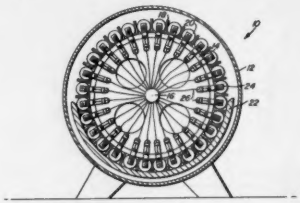
POSITIVE CONTACT ROTARY THERMOCOUPLE UNIT

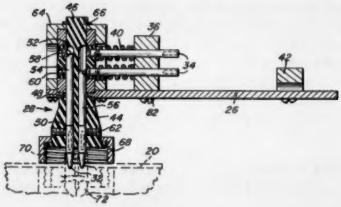
Edwin L. McIntyre, 700 W. A St., Dixon, Calif. 95620

Filed May 11, 1972, Ser. No. 252,191

Int. Cl. G01k *13/08, 7/04;* **H01r** *39/43*

U.S. Cl. 73—341 **9 Claims**





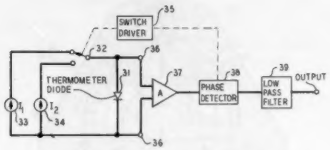
A rotary contact thermocouple assembly for heat penetration measurements of foods prepared by rotary cookers. The thermocouple assembly comprises a rotor core of insulation material which supports a pair of thermocouple contact terminals connected to a pair of conductive slip rings which coact with a pair of spring-biased brushes, whereby positive contact is maintained at all times over a relatively large temperature range.

3,812,717

SEMICONDUCTOR DIODE THERMOMETRY

Gabriel Lorimer Miller, Westfield, and David Arthur Hall Robinson, Murray Hill, both of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Apr. 3, 1972, Ser. No. 240,705
Int. Cl. G01k 7/24; H01l 9/10
U.S. Cl. 73—362 SC 8 Claims



A temperature measuring apparatus is disclosed, in which the temperature sensing element is a semiconductor diode. The diode used is constructed such that carrier recombination takes place principally within the depletion region of the p-n junction. The temperature reading is made by measurement of the forward voltage drop across the diode as the diode current is switched between two current levels of a fixed ratio. The difference between the voltages measured at the two current levels is linearly proportional to the absolute temperature. The temperature scale thus defined is essentially constant from diode to diode from cryogenic temperatures to somewhat above room temperature.

3,812,718

CASED HEAT RESISTANT ALLOY TO REDUCE MERCURY CORROSION

Harvey J. Shopsky, Latrobe, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Apr. 26, 1972, Ser. No. 247,773
Int. Cl. G01k 1/08, 5/00
U.S. Cl. 73—368 3 Claims

Mercury corrosion of the interior of closed metal vessels, such as bulbs of temperature responsive devices, which contain mercury at elevated temperatures and pressures is reduced by constructing the walls of such vessels of a heat resistant ferrous alloy which is essentially free of elements, such as chromium and nickel, that are relatively soluble in hot mercury and by casing the outer periphery of the walls normally exposed to an oxidizing atmosphere with an element such as chromium and/or nickel.

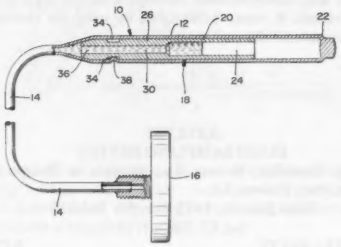
3,812,719

A TEMPERATURE BULB WITH AN INNER LINER TO REDUCE MERCURY CORROSION

Harvey J. Shopsky, Latrobe, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Apr. 26, 1972, Ser. No. 247,776
Int. Cl. G01k 5/00, 1/08
U.S. Cl. 73—368 2 Claims

Mercury corrosion of the interior of closed metal vessels, such as bulbs of temperature responsive devices, which contain mercury at elevated temperatures and pressures is reduced by providing the vessels with an inner liner constructed of a mercury resistant material which forms a barrier between the mercury and the interior of the vessel. The vessel walls which are normally exposed to an oxidizing atmosphere at their outer surfaces are constructed of a heat resistant ferrous alloy containing chromium and/or nickel. The liner material is essentially free of chromium and/or nickel.



3,812,720

INHIBITOR TO REDUCE MERCURY CORROSION

Harvey J. Shopsky, Latrobe, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Apr. 26, 1972, Ser. No. 247,772
Int. Cl. G01k 5/02; C23f 15/00
U.S. Cl. 73—368.4 4 Claims

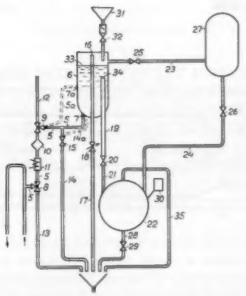
Mercury corrosion of the interior of closed metal vessels, such as bulbs of temperature responsive devices, which contain mercury at elevated temperatures and pressures is reduced by disposing an inhibitor, such as a film of ferric oxide, within the interior of the vessel. The vessels which are normally exposed to an oxidizing atmosphere on their outer surfaces are constructed of a ferrous alloy containing an element such as chromium and/or nickel.

3,812,721

MEANS FOR TAKING SAMPLES OUT OF A REACTION VESSEL CONTAINING ALKALINE LIQUID UNDER PRESSURE

Hakan Englund; Ronny Eriksson, and Bengt Nilsson, all of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Feb. 16, 1972, Ser. No. 226,864
Claims priority, application Sweden, Feb. 22, 1971, 2206/71
Int. Cl. G01n 1/10
U.S. Cl. 73—422 R 3 Claims



For taking samples from a sulphate digester which contains alkaline liquid under pressure, a circuit is provided with a pump from which a branch conduit leads through valves to the bottom of a container for the alkaline liquid. A valve pipe

leads downwardly from the top of the container to the atmosphere. There is also an outlet from the container below the top thereof. A sampling vessel is constituted by a pipe which opens at the top at an intermediate point within the container and communicates through a valved pipe with an analysis vessel. A water holder can be used for rinsing the analysis vessel and the container.

3,812,722

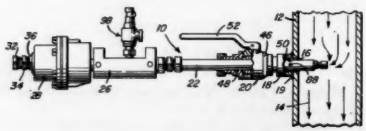
FLUID SAMPLING DEVICE

Morris A. Soudelier, Houma, La., assignor to Houma Valve Service, Inc., Houma, La.

Filed June 21, 1972, Ser. No. 264,828

Int. Cl. G01n *1/10*

U.S. Cl. 73—422 TC **6 Claims**



Fluid flowing through a conduit is sampled by repeated expansion of a pressure chamber in an elongated tubular housing projecting into the flow conduit through a sampling outlet to which the housing is releasably clamped. The pressure chamber is formed between an inlet check valve and a reciprocating piston mounted on a discharge check valve through which fluid is transferred to a passage in the piston plunger during contraction of the pressure chamber. A relief valve carried by the plunger opens in response to a predetermined pressure of the fluid in the plunger passage, to supply a sample of the fluid.

3,812,723

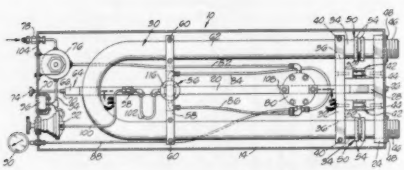
FORCE MEASURING WEIGHING DEVICE

Charles D. Barron, Fountain Valley, Calif., assignor to Byron Jackson, Inc., Long Beach, Calif.

Filed Jan. 21, 1972, Ser. No. 219,741

Int. Cl. G01g *5/04*

U.S. Cl. 73—434 **40 Claims**



A weighing device such as a U-tube densimeter for measuring the densities of liquids and producing indications of densities including a fluid pressure operated load or force measuring unit employing a booster pilot. The measuring unit has provision for balancing the tare weight of the U-tube and for making a zero set calibration for the U-tube.

3,812,724

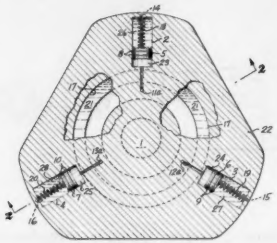
ROTATIONAL BALANCER

William C. Curtz, 8621 Fauntleroy Way, S.W., Seattle, Wash., 98116, and Merkham J. Matson, 17680 S.W. Blue Heron way, Lake Oswego, Wash. 97034

Continuation of Ser. No. 859,503, Sept. 19, 1969, abandoned. This application Dec. 16, 1971, Ser. No. 208,977

Int. Cl. G01m *1/16, 1/36*

U.S. Cl. 73—458 **23 Claims**



A rotating system for counterbalancing an off-center mass causing dynamic imbalance in a rotating body is provided. A fluid reservoir comprising a plurality of fluid accumulators disposed about a rotatively mounted body with interconnecting fluid passages communicating with each other in a circuit about the geometric axis and with the accumulators such that rotation of the body distributes a fluid into the accumulators variably in accordance with dynamic unbalance of the rotating system so as to return the rotation system toward rotational equilibrium.

The amount of fluid contained in each of the plurality of fluid accumulators may be taken as an indication of the amount and angular location of dynamic imbalance.

3,812,725

BALANCING APPARATUS

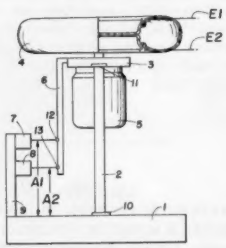
Helmut Frank, Dieburg; Otfrid Maus, Darmstadt-Arheilgen, and Endre Tary, Darmstadt, all of Germany, assignors to Carl Schenck Maschinenfabrik GmbH, Darmstadt, Germany

Filed Mar. 12, 1973, Ser. No. 340,078

Claims priority, application Germany, Mar. 28, 1972, 2215002

Int. Cl. G01m *1/22*

U.S. Cl. 73—462 **11 Claims**

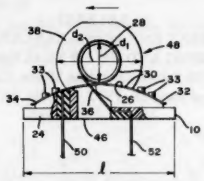


A dynamic mass balancing machine includes a flexibly supported motor drive shaft bearing assembly which is coupled to two motion sensor-transducers. The points of coupling are in a mutual vertical plane which is coplanar with the axis of rotation and the plane of displacement of the spring supported bearing assembly of the machine. The vertical coupling points of the sensor-transducers are located so that independent measurement of unbalances in two different planes will be achieved.

3,812,726
VELOCITY RESPONSIVE APPARATUS

Lon E. Bell, Altadena, Calif., assignor to Technar Incorporated, Pasadena, Calif.

Filed Sept. 28, 1972, Ser. No. 293,209
Int. Cl. G01p *7/00, 15/02*
U.S. Cl. 73—503 **14 Claims**

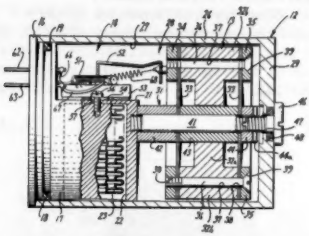


A velocity measuring apparatus is provided with means for increasing the rotational moment of inertia of a roller which displaces a band of electroconductive material against a preselected resisting force and into contact with a conductive member. The extent of displacement necessary for contacting the band with the conductive member is thereby decreased without changing the magnitude of the preselected resisting force. The velocity measuring apparatus is highly reliable in operation and is sufficiently compact to be economically installed in a limited space.

3,812,727
ACCELEROMETER

Robert L. Pitzer, Arcadia, Calif., assignor to Edcliff Instruments, Monrovia, Calif.

Continuation of Ser. No. 92,453, Nov. 24, 1970, abandoned.
This application Sept. 14, 1972, Ser. No. 288,951
Int. Cl. G01p *15/12*
U.S. Cl. 73—516 R **5 Claims**



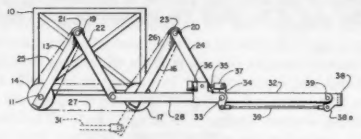
Seismograph, or moving mass, type of accelerometer in which the sensing mass has substantially the same diameter as the housing in which it is mounted. A potentiometer is utilized as an output transducer, and the unit is filled with a light weight oil to provide damping of the movements of the mass.

3,812,728
SPRAYING MACHINE

Henry B. Lee, Cudahy, Calif.; Donald E. Orem, and Paul L. Wycoff, both of Indianapolis, Ind., assignors to Ransburg Corporation, Indianapolis, Ind.

Filed May 29, 1973, Ser. No. 364,895
Int. Cl. F16h *21/16*
U.S. Cl. 74—25 **6 Claims**

A spray machine can reciprocate a cantilevered support for a spray device with straight-line motion. The machine includes a pair of linked mechanisms, each including a rotating first shaft with a first arm fixed to it and including at the end of the arm a second rotating shaft with a second arm fixed to it. The second shafts are rotated hypocycloidally about the first shafts

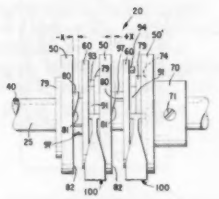


and swing linked ends of the second arms in a straight line. Spraying devices are movably cantilevered from the linked second arms so that they may be vertically positioned with respect to their support.

3,812,729
ELECTROMECHANICAL DISC ADDER MECHANISMS

Stanley J. Ketterer, Jamesburg, N.J., assignor to The Singer Company, New York, N.Y.

Filed July 16, 1973, Ser. No. 379,535
Int. Cl. F16h *25/12*
U.S. Cl. 74—56 **10 Claims**



An electromechanical adder mechanism for selectively influencing the operation of sewing machine stitch forming instrumentalities in accordance with a preselected pattern and comprising a plurality of discs which are arranged coaxially on a drive shaft including discs keyed to the drive shaft and freely journaled discs frictionally coupled to turn with the keyed discs. Axial cam segments on adjacent keyed and freely journaled discs may be selectively brought into engagement by electromagnetically influenced stop means for changing the angular orientation of the freely journaled discs relative to the keyed discs thus selectively to regulate the total axial dimension of the stack of discs on the shaft which is the output of the adder mechanism.

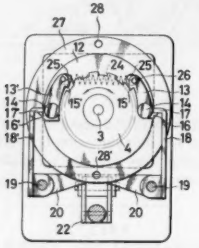
3,812,730
DEVICE FOR INTERMITTENTLY MOVING AN INFORMATION CARD OR THE LIKE FOR AN ADJUSTABLE PREDETERMINED DISTANCE

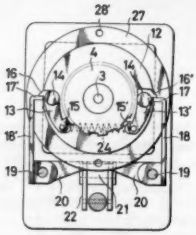
Nobuyuki Yanagawa, Kanagawa, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Oct. 24, 1972, Ser. No. 300,352
Claims priority, application Japan, Oct. 27, 1971, 46-84647
Int. Cl. F16h *27/00*
U.S. Cl. 74—112 **14 Claims**

A device for moving an information card, microfiche, or the like, including a reversible drive shaft, a clutch associated therewith, solenoid-operated means for controlling the clutch to produce a predetermined angular increment of output rotation from the clutch each time the solenoid is energized, and a set of gears for transmitting drive from the clutch to an output shaft that is connectable to move an information card. The clutch comprises a toothed wheel connected to the drive shaft, a separately rotatable disk, and a pair of arms pivotally

mounted on the disk for engaging the toothed wheel to drivingly connect the drive shaft to the disk. The clutch-controlling means comprises a pair of levers respectively engageable with the clutch arms, and movable by the solenoid to cause movement of the arms into and out of operation engagement with the teeth of the wheel. The transmitting gears include a





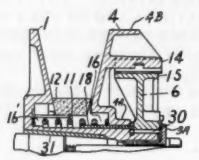
first gear connected to the disk, a sun gear connected to the output shaft, and a planet gear meshing with the first gear and sun gear and mounted so as to be movable about the sun gear when the first gear is stationary to effect minor angular displacement of the output shaft for fine adjustment of the position of the information card.

3,812,731

V-BELT TYPE AUTOMATIC SPEED CHANGE GEAR

Takao Sugimoto, and Izumi Takagi, both of Akashi, Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe City, Japan

Filed Jan. 16, 1973, Ser. No. 324,182
Claims priority, application Japan, May 27, 1972, 47-52645
Int. Cl. F16h *55/52*
U.S. Cl. 74—230.17 E **9 Claims**



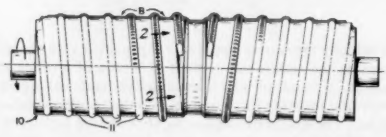
An automatic speed change V-Belt drive pulley having a fixed conical flange and a movable cooperating conical flange for engaging the edges of a V-Belt with a drive disc fixed to the same shaft carrying the fixed conical flange and cooperating cam means and centrifugally outwardly movable weights operating cam followers which engage the cam surface on one of the movable flange and the fixed disc so that when the centrifugal weight moves outwardly due to increased speed the movable flange moves toward the fixed flange thereby causing the V-belt to move outwardly along the surfaces of the belt engaging conical surfaces of the fixed and movable flanges, the centrifugal weights being mounted on pivoted arms pivoted about axes parallel with the shaft on which the speed change device is mounted.

3,812,732

SCALLOPED BELT ENGAGING TANGENT FOR RIBBING ON CENTERING AND IDLER TRACKING ROLLERS

Rene Conrad, 700 Catamaran, San Mateo, Calif.

Filed June 28, 1972, Ser. No. 267,139
Int. Cl. F16h *7/18*
U.S. Cl. 74—240 **12 Claims**



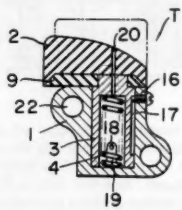
A serrated or scalloped tangent surface on ribbing for tracking rollers disposed to engage and grip ribbon strips of material such as belting with a positive traction therebetween. A series of equally spaced V grooves formed across the belt engaging tangent of ribbing and transverse to the lineal axis of the ribbing to provide intermediate lands. The provision of tooth like barbs on at least one edge of the V-shaped grooves of such scalloping and the variation in grip dependent upon belt characteristics by greater or lesser recessing of such ribbing into the peripheral surface of the roller.

3,812,733

TENSIONING DEVICE FOR FLEXIBLE MEMBERS

Hiroshi Yoshida, Urawa, Japan, assignor to Yamakyu Chan Kabushiki Kaisha, Tokyo-to, Japan

Filed May 4, 1973, Ser. No. 357,519
Claims priority, application Japan, May 17, 1972, 47-56823[U]; May 17, 1972, 47-56824[U]
Int. Cl. F16h *7/12*
U.S. Cl. 74—242.11 S **13 Claims**



A flexible elongated member such as a power transmission belt or chain which has a tendency to slacken during use can be automatically tensioned by a device comprising a support structure, a sliding member slidable in the support structure, an engaging member secured to the sliding member and adapted to engage the flexible member, resilient means biasing the sliding member in an advancing direction relative to the support structure, a series of indentations formed on one side of the sliding member, and detent means mounted in the support structure to engage one of the indentations. The de-

tent means is capable of selectively taking two positions in one of which the sliding member is prevented from advancing and in the other of which the sliding member is prevented from retracting.

3,812,734

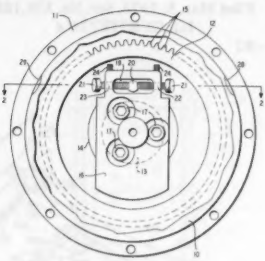
EXTERNALLY ADJUSTABLE CAM TIMER

Edward O. Hamburger, 6 Riverpark Dr., Brick Twp., Ocean County, N.J. 08723

Filed Jan. 30, 1973, Ser. No. 327,952

Int. Cl. F16h *55/30*

U.S. Cl. 74—243 PC **9 Claims**



For providing cam timing, a sprocket wheel housed in a timing cover is attached to a cam shaft by means of an intermediate adjusting arm placed in a recess of the sprocket wheel. The adjusting arm is rigidly fixed to the cam shaft and moveably secured to the sprocket wheel. Adjustment of the relative angular positions of the sprocket wheel and the cam shaft is achieved by repositioning a screw in the adjusting arm which is inclined to the face of the sprocket wheel so as to facilitate its rotation without removal of the timing cover.

3,812,735

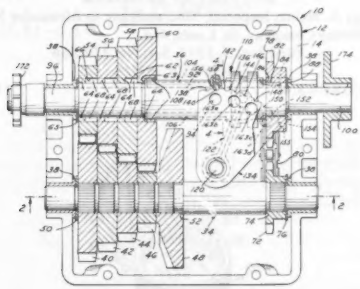
TRANSMISSION

Roland L. Von Kaler, Tecumseh, and Norman E. Jolliff, Tipton, both of Mich., assignors to Tecumseh Products Company, Tecumseh, Mich.

Continuation-in-part of Ser. No. 171,920, Aug. 16, 1971, abandoned. This application Jan. 31, 1973, Ser. No. 328,481

Int. Cl. F16h *3/08*

U.S. Cl. 74—371 **65 Claims**



A change-speed transmission with a shift mechanism which selectively couples a plurality of change gears one at a time to a shaft on which the gears are journalled. The shift mechanism is disposed entirely within the transmission housing and includes a shift key arranged for axial sliding movement in a groove in the shaft. A pair of axially spaced projections at one end of the key project outwardly of the groove to embrace a collar which is journalled on the shaft. The collar is axially shifted on the shaft by a rotary shift fork which engages a circular groove in the collar to selectively position the key axially of the shaft in its several gear-engaging positions. A third radial projection at the other end of the key engages a different gear in each of the several positions thereby drivingly coupling the selected gear to the shaft to provide various forward drive speeds. The end projection of the projection pair which embrace the collar is adapted to engage a reverse gear on the other end of the shaft for providing a single reverse speed. The arrangement and construction of the several gears and the shift key are such that when the key is shifted between adjacent gear-engaging positions, it always passes through a neutral position wherein no gear is drivingly coupled to the shaft. The shift mechanism includes a detent arrangement for positively establishing selected shift positions which are correlated to the gear-engaging and neutral positions of the shift key. The particular detent arrangement permits a neutral safety switch to be used with the shift mechanism without any additional parts other than the switch itself so that the engine to which the transmission is coupled may be cranked when the transmission is in any one of its several neutral positions. A modified change speed transmission is also disclosed incorporating an improved yieldable self-biasing spring shift key, gear construction and detent sector.

3,812,736

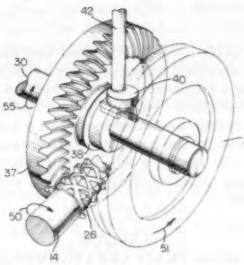
REVERSING MECHANISM

Gerhard Nickstadt, Oakland, N.J., assignor to General Electric Company, Fort Wayne, Ind.

Filed Aug. 30, 1972, Ser. No. 284,946

Int. Cl. F16h *57/00, 3/14, 55/04*

U.S. Cl. 74—404 **10 Claims**



A gear drive reversing mechanism is disclosed for reversing the direction of rotation of an output shaft driven by a drive shaft rotating in a contant direction. A gear drive reversing mechanism is also disclosed for driving two output shafts in mutually opposite rotary directions by means of a drive shaft rotating in a constant direction. The mechanisms include spiral angle face gears driven by pinions having both right-hand and left-hand spiral angle pinion gear teeth.

3,812,737

WORM GEAR CONSTRUCTION

Gary Campbell, Gering, Nebr., and Eliot K. Buckingham, Springfield, Vt., assignors to Lockwood Corporation, Gering, Nebr.

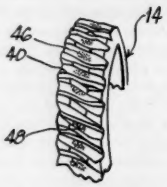
Filed Feb. 9, 1973, Ser. No. 331,336

Int. Cl. F16h *1/16, 55/04*

U.S. Cl. 74—425 **6 Claims**

A gearbox construction comprising a housing rotatably supporting a worm gear and a meshing worm. The worm and worm gear are characterized by a recessed action drive relationship. The worm and worm gear are both formed of iron

castings, and the tensile strength of the respective castings is selected so that the worm will have a tensile strength between 75,000 and 105,000 pounds per square inch with the tensile strength of the worm gear being between 45,000 and 55,000



pounds per square inch. The recessed action drive and the combination of materials used for the worm and worm gear provide a gearbox construction suitable for very low speed-high torque applications.

3,812,738

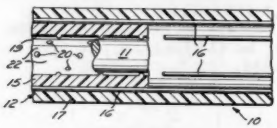
FLEXIBLE CABLE ASSEMBLY

Louis B. Courtot, Euclid, Ohio, assignor to The Weatherhead Company, Cleveland, Ohio

Filed Apr. 6, 1972, Ser. No. 241,776

Int. Cl. F16c *1/10*

U.S. Cl. 74—501 R **3 Claims**



A control cable assembly, method and apparatus for its manufacture wherein a casing includes a flexible plastic body portion having a longitudinal bore in which are formed axially and circumferentially spaced plastic projections which cooperate to radially and slidably support a wire core therein. In one embodiment the projections are formed as elongated filaments or cilia having a non-axial orientation to improve cable efficiency under bending conditions and in reversal of wire movement.

3,812,739

GEAR TRAIN ARRANGEMENTS

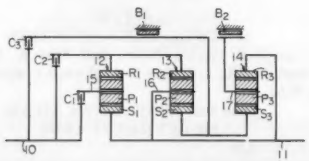
Yoichi Mori, Yokohama; Nobuo Okazaki, Chigasaki; Kunio Ohtsuka, and Tetsuya Iijima, both of Tokyo, all of Japan, assignors to Nissan Motor Company Limited, Yokohama City, Japan

Division of Ser. No. 30,496, April 21, 1970, Pat. No. 3,701,293. This application Sept. 13, 1972, Ser. No. 288,550

Claims priority, application Japan, June 4, 1969, 44-43274

Int. Cl. F16h *57/10*

U.S. Cl. 74—763 **1 Claim**



Gear train arrangements for transmitting a power from a driving source to a driven member at more than three speeds in one direction and another speed in the opposite direction, the gear train arrangements using basically three planetary gear sets and at least five friction elements such as clutches and brakes which are selectively actuated to selectively engage the rotary members of the three planetary gear sets to deliver an output power at the above said speeds. The gear train arrangements are specifically adapted for use in an automatic transmission system of a motor vehicle using a torque converter or fluid coupling.

3,812,740

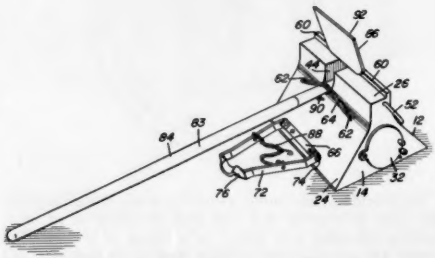
HOLDER FOR HANDLED TOOLS TO BE SHARPENED

William J. Gilliland, R.R. 2, Box 254, Campbell, Mo. 33830

Filed Mar. 5, 1973, Ser. No. 338,188

Int. Cl. B21k *11/14*

U.S. Cl. 76—82 **8 Claims**



A support body including a broad and long undersurface for stable support from any suitable supporting surface such as a workbench or the ground. The body further includes specifically contoured upper surface portions and attendant selectively usable prop structure for supporting various types of tools such as rakes, hoes, hatchets and axes, in stationary position relative to the body and in an attitude adapted to have the work-engaging surfaces thereof sharpened by the use of a sharpening implement such as a file. Still further, the body is hollow and defines an interior storage compartment together with a removable closure for one end of the compartment and the storage compartment is of dimensions adapted to have sharpening tools such as a file and a cleaning tool such as a wire brush stored therein.

3,812,741

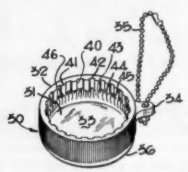
BOTTLE CAP REMOVER

Charles A. Heine, Imperial, Mo., assignor to Alexander Manufacturing Company, St. Louis, Mo.

Filed Jan. 3, 1972, Ser. No. 214,866

Int. Cl. B67b *7/18*

U.S. Cl. 81—3.4 **1 Claim**



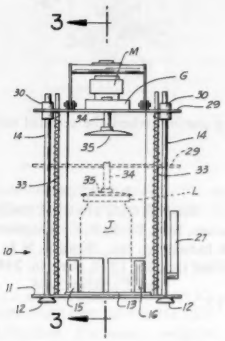
This bottle cap remover includes a unitary body having an opening adapted to receive a bottle cap of the type having circumferential ribs and grooves. The opening defines a side wall and an end closure wall, the side wall including a correspond-

ing number of ribs and grooves compatibly shaped to suit the ribs and grooves of the cap. The closure wall is engageable by the cap to facilitate the cap removal, which is effectuated by twisting the body.

3,812,742
JAR OPENER

Emil Polasek, Route 3, Box 278B, Corpus Christi, Tex. 78415

Filed Aug. 10, 1972, Ser. No. 279,506
Int. Cl. B67b *7/14*
U.S. Cl. 81—3.32 **10 Claims**

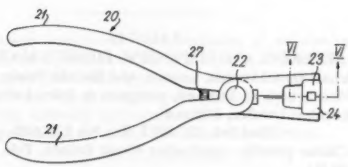


An apparatus is disclosed for mechanically rotating lids of jars wherein a jar is placed on the frame of the apparatus and a pair of cupped opposing arms, attached to the frame, are forced by resilient means to clamp the jar tightly against movement while a lid rotating means, having a high coefficient of friction and mounted on the frame and disposed above the pair of cupped opposing arms, engages the lid of the jar for rotation.

3,812,743
DETACHABLE BLADE HANDLING TOOL

Alexander Shaw, and Joseph McKie, both of Glascow, Scotland, assignors to National Research Development Corporation, London, England

Filed Jan. 23, 1973, Ser. No. 326,150
Claims priority, application Great Britain, Jan. 28, 1972, 4170/72
Int. Cl. B25b *7/02*
U.S. Cl. 81—5.1 R **6 Claims**

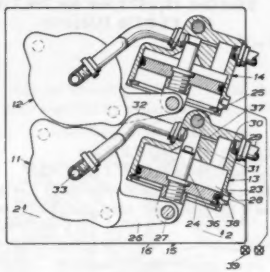


A tool for separating detachable blades from surgical scalpels takes the form of a pair of pliers having a respective channel formation in each jaw, the side walls of which formations approach engagement in mutually facing and aligned disposition during closure of the tool to define a passageway therethrough. This passageway receives the stem portion of a holder on which a conventional detachable scalpel blade is clipped, and the side walls of one of the channel formations are relieved towards one end thereof, and the side walls of the other formation elevated towards the corresponding end thereof, so that closure of the tool jaws grips the blade while lifting one end of the blade from the holder. The blade can then be slid off the holder while still held by the tool.

3,812,744
TORQUE CONTROL DEVICE FOR A NUT RUNNER OF THE CONTINUOUS TORQUE TYPE

Sven Peter Jonas Westerberg, Saltsjo-Boo, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Nov. 20, 1972, Ser. No. 307,762
Claims priority, application Sweden, Nov. 25, 1971, 15131
Int. Cl. B25b *13/00*
U.S. Cl. 8—52.4 R **15 Claims**

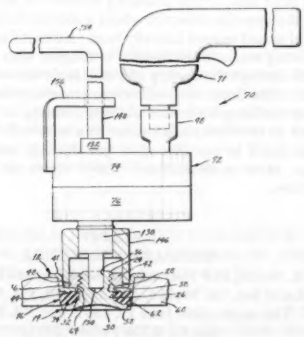


A multiple nut runner comprises a frame in which a number of coaxial nut runners are rotatably mounted. Each nut runner has an arm on the housing and a pneumatic cylinder coupled between the arm and the frame so as to transmit the reaction torque to the frame. The cylinder is built together with a control valve that shuts off the motive air to the pneumatic motor of the nut runner in response to the cylinder giving away at a pre-determined torque. The cylinders and the motors as well, are connected to a common adjustable pressure regulator.

3,812,745
CLOSURE DEVICE

Eugene E. Wehmeyer, c/o Provident Tool & Engineering Co., 4501 Swan Ave., St. Louis, Mo. 63110

Filed Aug. 9, 1972, Ser. No. 278,996
Int. Cl. B25b *17/00*
U.S. Cl. 81—56 **12 Claims**



A closure device for sealing the opening of a refillable container, the closure device including spaced pressure members

having a soft resiliently deformable washer member sandwiched therebetween, and a tightening member engageable with a neck portion of one of the pressure members for drawing the pressure members together. Tightening apparatus for the closure device includes a power driven wrench engageable with the tightening member. The wrench is power driven through a transmission device by a torque controlled power unit, thereby enabling a predetermined torque to be applied to the pressure members. A key member engageable with the pressure member neck portion holds the closure device in fixed position during torquing of the pressure members.

3,812,746

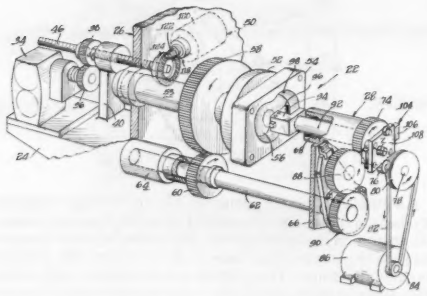
APPARATUS FOR FORMING EPITROCHOIDAL SURFACES

Oliver Edward Saari, Niles, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Oct. 11, 1972, Ser. No. 296,710

Int. Cl. B23b *3/28, 3/00*

U.S. Cl. 82—18 **19 Claims**



The present invention relates generally to apparatus for forming with a high degree of accuracy an epitrochoidal surface in a recessed workpiece, and more particularly to novel and practical mechanism for forming such surfaces in the cylinder block of a rotary type internal combustion engine. The embodiment of the invention disclosed herein comprises a machine frame upon which is mounted means for supporting a recessed workpiece or cylinder block and for rotating said workpiece at a predetermined speed in a given direction about a first fixed axis. A tool actuating member or spindle is rotatable in the opposite direction about a second fixed axis which is parallel to and spaced laterally from said first fixed axis. A tool supporting means or boring bar is coupled with said actuating spindle through the agency of a unique device which oscillates about a third fixed axis and serves to maintain the cutting edge of said tool in position for actively forming an epitrochoidal surface as the workpiece rotates at a relatively high predetermined speed in one direction and the tool actuating means rotates at a predetermined faster speed in the opposite direction.

3,812,747

TOOL ARM STRUCTURE

Carl H. Werth, 818 Thurman St., Saginaw, Mich. 48602

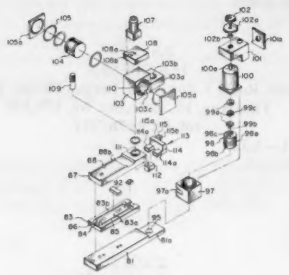
Division of Ser. No. 59,443, July 30, 1970, Pat. No. 3,707,101.

This application June 12, 1972, Ser. No. 261,939

Int. Cl. B23b *29/034, 29/12*

U.S. Cl. 82—36 R **10 Claims**

A tool arm structure comprising a movable or yieldable, tool mounting portion, adjustable control mechanism for adjusting the machining position of the tool mounting portion, and mechanism for separating the adjusting mechanism and



tool mounting portion when the control mechanism is being adjusted.

3,812,748

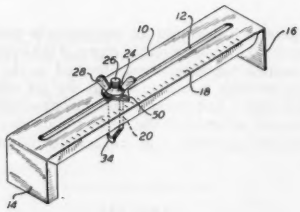
GLASS CUTTING DEVICE

Irving Nausbaum, New York, N.Y., assignor to New Age Mirror and Tile Industries, Inc., Newark, N.J.

Filed Oct. 17, 1972, Ser. No. 298,227

Int. Cl. B26d *3/08*

U.S. Cl. 83—12 **6 Claims**



A device for cutting glass which can cut a sheet of glass of indeterminate length has a central bridge member with a channel formed therein. It has one or two outwardly extending arms which may be perpendicular to the bridge member. A glass cutter wheel is interlockable with the central bridge member channel through a cutting support member. The bridge member has distance markings inscribed on it. The cutter support member is adapted to be engaged by a pointer member which will indicate glass cutter position in respect to the bridge member.

3,812,749

SEVERING AND DISPENSING FIBROUS MATERIAL

Michael David Lowen, London, and Ronald Newby, Boreham Wood, both of England, assignors to John Laing and Son Limited, London, England

Filed Feb. 23, 1972, Ser. No. 228,607

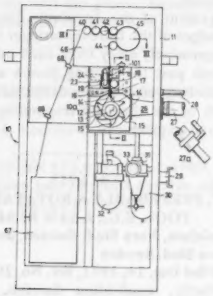
Claims priority, application Great Britain, Feb. 25, 1971, 5426/71

Int. Cl. B26d *7/24*

U.S. Cl. 83—66 **15 Claims**

The present invention relates to an apparatus for severing a predetermined quantity of fiber into short lengths and dispensing same through an air conveyor. The apparatus is powered by compressed air. A pneumatic motor drives the cutter and one of the feed rollers, whilst a pneumatic piston and cylinder arrangement forces a pressure roller into contact with the feed roller when feeding of the material is required. A

digital counter which is pre-set to meter the required amount of fibre is indexed by pneumatic pulses generated by the feed



mechanism and provides a stop signal to the apparatus when the batch is complete. Low pressure air fluidic devices control the various functions of the apparatus.

3,812,750

AUTOMATICALLY CONTROLLED BRAKE ACTUATOR FOR UNMANNED VEHICLES

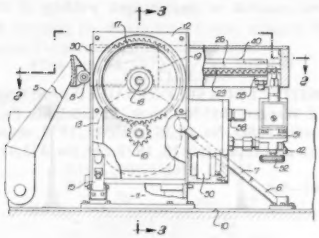
Ulrich Meyer, Lilienthal, Germany, assignor to Vereinigte Flugtechnische Werke-Fokker, Gesellschaft mit beschrankter Haftung, Bremen, Germany

Filed June 26, 1972, Ser. No. 266,094

Claims priority, application Germany, July 6, 1971, 7127342

Int. Cl. F16d *65/28*; **B60t** *13/74*

U.S. Cl. 188—106 P **11 Claims**



An actuator mechanism for installation in an unmanned vehicle and for operation of the brake pedal. The mechanism includes a pair rods driven by a motor with disk rotor and coupled thereto through gearing. A pneumatically operated emergency brake actuator can operate the pedal independently from the position of the motor driven actuator portion.

3,812,751

MITER CLAMP VISE AND SAW

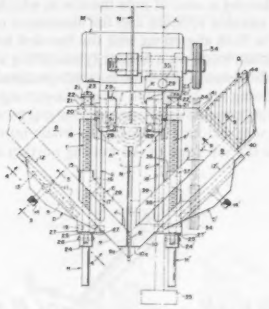
Robert W. Lewis, P.O. Box 132285, Oakland, Calif. 94661

Filed Sept. 8, 1972, Ser. No. 287,422

Int. Cl. B27b *5/20*; **B23d** *45/14*

U.S. Cl. 83—471.3 **5 Claims**

A miter clamp vise and saw that can grip an elongated piece of material and make a transverse cut in it that is at a 45° angle right or left to the length of the material. Also the device can clamp two pieces that have already had their ends provided with 45° angle cuts, the clamps gripping the pieces for holding



the mitered ends in abutting relation while the operator secures these ends together by nails or adhesive and the like.

3,812,752

SAW FOR COLD METALS

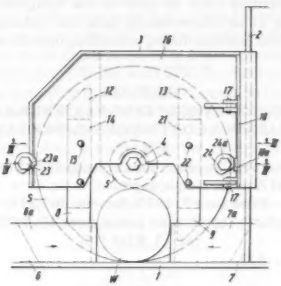
Leopold Jaegers, Euskirchen/Rhld, Germany, assignor to Trennjaeger Maschinen und Saegefabrik, Euskirchen/Rhineland, Germany

Filed Sept. 1, 1971, Ser. No. 180,237

Claims priority, application Germany, Sept. 3, 1970, 2043599

Int. Cl. B23d *19/00*; **B26d** *1/12*

U.S. Cl. 83—478 **2 Claims**



Improved cold saw for metals utilizing a vertically displaceable circular saw blade and transmission therefor whereby the saw blade is positioned between guide means on each side of the major plane thereof. Each guide means has four points of contact with the major surface of the saw directed toward it consisting of two above and two below the saw axis and two in front and two behind the saw axis.

3,812,753

MICRO-FILM JACKET-NOTCHING DEVICE

Paul A. Kiejzik, 2907 Monterey Ct., Springfield, Pa. 19069

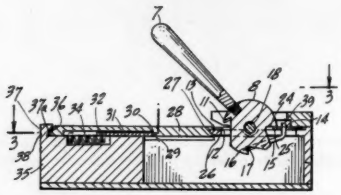
Filed Oct. 15, 1973, Ser. No. 406,594

Int. Cl. B26d *7/28*, *5/10*

U.S. Cl. 83—522 **7 Claims**

In a preferred embodiment, a wheel-like blade structure shaped substantially as a disk having a substantially flat circumscribing periphery with a notch therein forming the blade, and with each of opposite ends of the disk extending axially in

substantially conical shapes and being biased in an upward blade position, havkng handle structure for rotating the disk in a downwardly blade-cutting direction against a biasing spring which spring simultaneously biases a flat horizontally positioned plate having a central hole therein in which the disk is mounted for suitable rotation and for movement of the blade downwardly in flush alignment with the forward inner edge of the hole in order to effect a scissor-type cutting action, with there being shoulders extending in opposite directions from the notch defining the blade, the shoulders serving as aligning shoulders for a linear edge of a microfilm jacket which when aligned therewith extends through the blade-notch between the blade and the top edge of the cutting portion of the plate



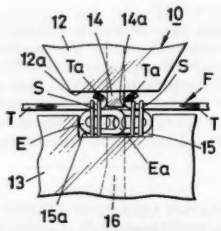
such that when the blade is brought downwardly a notch is cut into the edge of the microfilm jacket, and there being a slidable flat horizontally positioned plate for sliding to and fro laterally in front of the aligning shoulders and in front of the cutting blade, on which the microfilm jacket is flatly mountable with there being included on the slidable microfilm mount a plurality of designations in series of different notching positions relative to a seating position for the microfilm jacket on the horizontal laterally to and fro slidable plate, and including a spring-biased key for snap-in releasable engagement of the slidable mounting plate in each of the designated notching positions so as to intermittently hold the slidable mounting plate in a fixed position during a notching operation.

3,812,754

APPARATUS FOR PRODUCING FASTENER-ELEMENT-FREE GAPS IN A CONTINUOUS SLIDER FASTENER CHAIN

Koichi Kawakami, Toyama, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed June 7, 1973, Ser. No. 367,711
Claims priority, application Japan, June 10, 1972, 47-57938
Int. Cl. B26f *1/02*
U.S. Cl. 83—622 **2 Claims**



An apparatus is disclosed for producing fastener-element-free gaps in a continuous slide fastener chain. The apparatus comprises a punch block, a cutting punch reciprocally movable therein, and a die block positioned in oppositely spaced relation to said punch block and having a recess for receiving a group of fastener elements to be severed, said cutting punch having an upward stroke limited such that the distance between an extreme operating end of said punch and the bottom surface of said recess is smaller than the overall thickness of said fastener chain but larger than the thickness of said fastener elements.

The arrangement of the apparatus ensures that adjacent longitudinal edges of the fastener stringer tapes are deflected upwardly progressively away from each other as the fastener chain is moved past the cutting punch so that a group of fastener elements severed off the deflected edges of said tapes along a length of the chain corresponding to a fastener-element-free gap to be produced.

3,812,755

PRODUCT, PREFERABLY A ROTATABLE WORKING TOOL, E.G., A SAW BLADE

Bo Sixten Danielsen, Nora Stad, Sweden, assignor to AB Nora-Gomex, Nora Stad, Sweden

Filed Dec. 14, 1971, Ser. No. 207,895
Claims priority, application Sweden, Dec. 14, 1970, 16892/70; Apr. 20, 1971, 5081/71
Int. Cl. B27b *33/08*; **B23d** *61/02*
U.S. Cl. 83—835 **13 Claims**

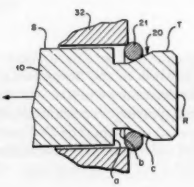
A rotatable working tool assembled of at least two parts which are intimately interconnected by a flue and adapted to eliminate oscillations; the glue may contain an electrically conductive material to enable spot welding of the parts together.

3,812,756

POSITIVE LOCK SELF-RETAINED FASTENER

Maurice J. Wenger, 5813 N. 13th St., Philadelphia, Pa. 19141

Continuation of Ser. No. 10,353, Feb. 11, 1970, abandoned.
This application July 18, 1972, Ser. No. 273,017
Int. Cl. F16b *19/00, 21/18*
U.S. Cl. 85—8.8 **13 Claims**



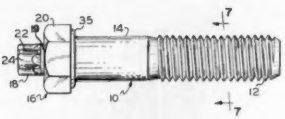
A positive lock self retained bolt adapted to pass into a hole in a work piece. The bolt automatically locks when fully inserted. Locking means on the bolt are provided near the end thereof first inserted into the work piece and become operative to lock after passing beyond the hole in the work piece. The locking means comprise an annular groove in the bolt and a ring having an elastically compressible overall diameter in the groove. The groove has certain cross-sectional configura-

tions, generally characterized by having one wall substantially perpendicular to the long axis of the bolt, a bottom surface, and another wall having an average slope from the bottom surface to outer surface of the bolt in the direction of insertion of the bolt, and the ring and the groove having certain mutual positional and dimensional relationships.

3,812,757
THREADED FASTENER WITH TORQUE CONTROL HEAD

Bernard F. Reiland, Rockford, Ill., assignor to Textron Inc., Rockford, Ill.

Continuation of Ser. No. 873,915, Nov. 4, 1969, abandoned. This application Jan. 27, 1972, Ser. No. 221,399
Int. Cl. F16b 31/02
U.S. Cl. 85—61 **7 Claims**

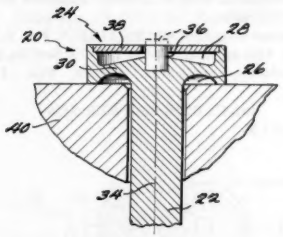


A threaded bolt has an enlarged hexagonal auxiliary driving head and an outwardly adjoining smaller main driving head. The small driving head is dimensioned so that it will shear from the remainder of the bolt under an applied driving torque which approximates the seating torque of the bolt. Thus when the bolt is screwed into a workpiece by applying a driving tool to the small driving head, the small head shears from the bolt when the bolt is fully seated and tightened in an assembly under a tensile load approximating the design load of the bolt. The large hole is used in removing the fastener from the assembly.

3,812,758
BOLT HEAD WHICH MEASURES AND MAINTAINS PRELOAD

Robert B. Bossler, Jr., Bloomfield, Conn., assignor to Kaman Aerospace Corporation, Bloomfield, Conn.

Filed Oct. 24, 1972, Ser. No. 299,799
Int. Cl. G01l 5/00
U.S. Cl. 85—62 **8 Claims**

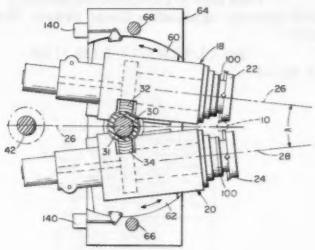


A bolt providing an indication of pre-load and continuous load thereafter wherein the bolt head has recesses on both sides thereof leaving a central ring which functions as a diaphragm spring and deflects along the bolt axis as a function of load. An indicator pin is mounted in or forms part of the ring so as to deflect with the ring, moving through a passage in an indicator washer or ring which closes the top recess and which permits a ready determination, by comparison of the relative positions of pin and indicator ring, of bolt pre-load. A further embodiment of the pre-load indicating device eliminates the indicator pin and replaces the indicator washer with a transverse buckled column, which indicates load along the bolt axis by the deflected location of the buckled column.

3,812,759
CUTTING TEETH ON WORKPIECES

Ernest Wildhaber, Rochester, N.Y., assignor to Bird Island, Inc., Boston, Mass.

Filed Mar. 22, 1973, Ser. No. 343,969
Int. Cl. B23f 1/06
U.S. Cl. 90—3 **12 Claims**

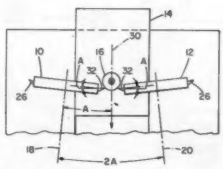


Apparatus for cutting teeth on a workpiece, comprising a workpiece support rotatable about a work axis; a pair of cutters respectively rotatable about cutter axes; each cutter having cutting edges arranged to make successive finish cuts each extending across the entire working depth of a tooth; the edges of each cutter having identical radial and axial positions relative to their respective cutter axes; the cutter axes defining a plane transverse to the work axes; the cutter axes lying on opposite sides of the work axes and defining therebetween an acute angle; one cutter having its cutting edges offset forward, with respect to its cutter axis, of a plane transverse to that cutter axis and including the work axis; the other cutter having its cutting edges offset rearward; with respect to its cutter axis, of a plane transverse to that cutter axis and including the work axis; the cutters being arranged to respectively cut the opposite surfaces of each tooth, with the cutting edges cutting clearance for each other; and a drive train for rotating the cutters and the work piece in timed relation to each other and effecting relative feed motion between the cutters and the workpiece axially of said workpiece.

3,812,760
GEAR MAKING

Ernest Wildhaber, Rochester, N.Y., assignor to Bird Island, Inc., Boston, Mass.

Filed Apr. 9, 1973, Ser. No. 348,889
Int. Cl. B23f 5/20
U.S. Cl. 90—3 **4 Claims**



Gear making apparatus of the type in which a rotary cutter has linear cutting edges, a relative feed motion is provided between the cutter and a continuously indexing workpiece to

approximate the profile generating motion of an imaginary rack conjugate to the profiles to be generated, and the cutting edges lie in a longitudinally concave surface of revolution about the cutter axis and provide crowned gear teeth, the direction of the cutter axis being altered to bring the profile generating cutting edges closer to, or into, the plane of the ideal rack tooth surface as the edges pass through a plane halfway across the face width of the workpiece.

3,812,761

GEAR HOBBING MACHINES

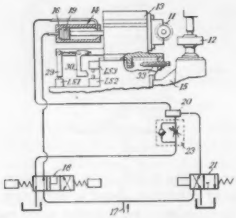
Christopher John Morrison Southworth, Ryton-upon-Tyne, England, assignor to Machine Tool Divisional Services Limited, Coventry, England

Filed May 3, 1972, Ser. No. 250,042

Claims priority, application Great Britain, May 4, 1971, 12964/71

Int. Cl. B23f *5/22*; **B23b** *21/00*

U.S. Cl. 90—4 **2 Claims**



A gear hobbing machine comprising a rotary hob, an infeed slide carrying the hob, a hydraulic piston and cylinder assembly connected to the infeed slide and operable to advance it towards a gear blank to be hobbed, said cylinder and piston assembly discharging liquid during advance of the infeed slide through a normally open pilot operated check valve, a solenoid operated valve which normally permits of application of hydraulic pressure to the pilot of the check valve to maintain the check valve open, and a limit switch operable by the infeed slide to actuate the solenoid operated valve to cut off pressure from the pilot of the check valve and thereby to cause closure of the check valve to terminate advance of the infeed slide.

3,812,762

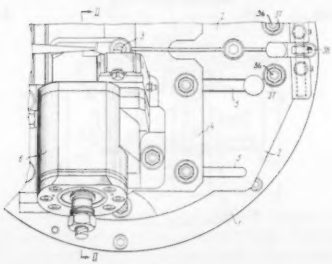
GEAR-CUTTING MACHINE

Alexei Petrovich Koshaev, ulitsa Ogorodnaya 170/I kv. 29, Saratov, U.S.S.R.

Continuation of Ser. No. 850,040, Aug. 14, 1969. This application Feb. 28, 1972, Ser. No. 230,105

Int. Cl. B23f *1/04*

U.S. Cl. 90—10 **3 Claims**



A support for a machine for cutting straight toothed bevel gears comprises a tool holder supported from first and second adjusting assemblies, the tool holder undergoing rotational movement about one assembly by means of a drive connection therefrom while undergoing oscillating movement about the second assembly so as to perform an oscillatory movement in which the tip of a tool carried by the holder moves along a closed curve of wedge-like form.

3,812,763

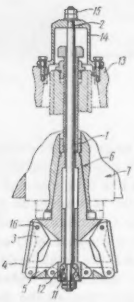
CUTTING TOOL

Anatoly Dmitrievich Neshumaev, ulitsa Kremenetskaya, 4/9, kv. 37; Boris Konstantinovich Goncharov, ulitsa Entuziastov, 45, kv. 107; Anatoly Alexeevich Smolyar, ulitsa Entuziastov, 45, kv. 104, and Leonid Nikolaevich Chigir, ulitsa Scherbakova, 59, kv. 10, all of Kiev, U.S.S.R.

Filed Mar. 30, 1971, Ser. No. 129,379

Int. Cl. B23q *3/16*

U.S. Cl. 90—11 A **3 Claims**



A tool of the milling cutter-type with a variable angle of inclination of the cutting members mounted on levers one end of which is pivotally connected to a holder and the other end is connected to a rod mounted coaxially to this holder, characterized in that the holder has a tail to provide for a direct connection with the machine spindle and also in that the rod can be secured in the stationary member of the machine.

3,812,764

DRIVING SYSTEM OF THE SPINDLE OF A MILLING LATHE

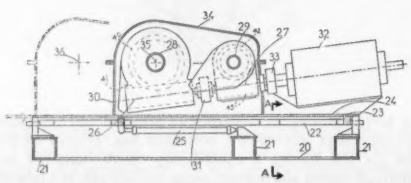
Claude Brochard, Dunkerque, and Rene Cossart, Coudekerque-Branche, both of France, assignors to Creusot-Loire, Paris, France

Continuation-in-part of Ser. No. 113,829, Feb. 9, 1972, abandoned. This application May 7, 1973, Ser. No. 357,829

Claims priority, application France, Feb. 11, 1970, 70.04748

Int. Cl. B23b *3/22*; **B23c** *3/00*

U.S. Cl. 90—11 R **2 Claims**



One or more hollow spindles of a milling lathe are driven by tangent wheel and worm reduction gears at different speeds with the worms aligned; connected; and rotated by a single

motor. The spindles are selectively moved to a working position by a jack, which moves the entire assembly, to bring the selected hollow spindle into position to receive the bar to be milled. Each spindle mounts a tool support plate which in turn carries cutters to mill the bar as it passes through the support plate.

3,812,765

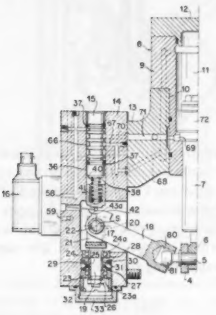
DEVICE FOR ADJUSTING THE STROKE VOLUME OF HYDRAULIC UNITS

Conrad R. Himmler, Les Essarts-Le-Roi, France, assignor to Indramat-Gesellschaft Fuer Industrie Rationalisierung und Automatisierung GmbH, Lohr am Main, Germany

Continuation of Ser. No. 58,031, July 24, 1970, abandoned. This application Mar. 3, 1972, Ser. No. 231,605

Int. Cl. F15b *13/16*

U.S. Cl. 91—387 **6 Claims**



A control cylinder is operative for adjusting the stroke volume of a hydraulic unit, and restoring means is provided for restoring a piston in the control cylinder from a displaced control position to a normal starting position. Servo-control means is associated with the control cylinder and comprises fluid supply means for supplying pressure fluid to the cylinder, control valve means controlling the flow of such pressure fluid to the cylinder, and throttling-gap regulating means operatively associated with the control valve means and with the cylinder via the restoring means for controlling the operation of the cylinder.

3,812,766

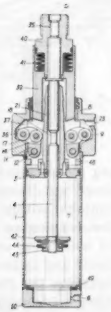
WORK LOCATING APPARATUS

Dieter Weiss, Wilhelmstrasse 58, Neckarweihingen, Germany

Filed Apr. 28, 1972, Ser. No. 248,455

Int. Cl. F15b *15/22*

U.S. Cl. 92—14 **22 Claims**



A work locating apparatus having a tension member actuated by an actuating member, particularly an actuating piston, via a starting stroke and a working stroke in which a pneumatic cylinder constitutes a control means and a mechanical step-up mechanism is operable between the control means and the tension member with the actuating member abutting directly the tension member by the starting stroke and the step-up mechanism by the working stroke of the tension member.

3,812,767

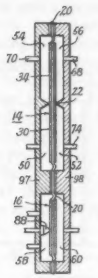
PLANAR PRESSURE-RESPONSIVE ELEMENTS

Robert C. Prescott, Foxboro, Mass., assignor to The Foxboro Company, Foxboro, Mass.

Continuation-in-part of Ser. No. 163,951, July 19, 1971, Pat. No. 3,717,162. This application Feb. 2, 1972, Ser. No. 222,934

Int. Cl. F01b *19/00*

U.S. Cl. 92—48 **18 Claims**



Pneumatic instrumentation apparatus of the planar type comprising a laminar sandwich construction one layer of which is a stiffly-flexible metal plate formed with cut-out openings to define an interior flat operator pivotally and sealingly supported at intermediate pivot axis region. The operator includes two separate but integral sections, located on opposite sides of the pivot axis. One of these sections is sub-divided into a plurality of separate side-by-side segments each integral with the pivot axis region, and arranged to supply separate torques to such pivot axis, or to move therewith in response to forces applied by other segments of the operator. Such multi-segmented pivotable operator is embodied in a variety of instruments, including process controllers, a ratio unit, and a digital-to-analog converter.

3,812,768

METHOD AND DEVICE FOR PRODUCING A CIGARETTE FILTER UNIT

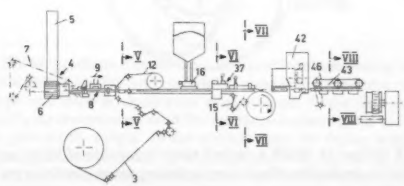
Charles Burrus, Boncourt, and Serge Boegli, Zurich, both of Switzerland, assignors to F. J. Burrus & Cie, Boncourt, Switzerland

Filed July 14, 1972, Ser. No. 271,639

Claims priority, application Switzerland, July 16, 1971, 010464/71

Int. Cl. A24c *5/50*

U.S. Cl. 93—1 C **4 Claims**



The invention relates to a method and a device for producing a cigarette filter unit wherein an external cover strip even-

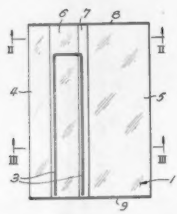
tually shaped as a tube, is glued around the entire periphery of filter elements which are spaced and aligned axially within said tube, fluent filter material being disposed between adjacent pairs of filter elements within the tube.

3,812,769

MANUFACTURE OF PLASTIC BAGS

John Grober Barnes, Brampton, Ontario; Emil Bizon, Mont-Saint-Hilaire, Quebec; Charles Robertson Murray, Toronto, Ontario; Edward Kenneth Rowley, Beloeil Station, and Clayton Thomas Waugh, St. Leonard, Quebec, all of Canada, assignors to Canadian Industries Limited, Montreal, Quebec, Canada

Filed Dec. 7, 1972, Ser. No. 312,961
Claims priority, application Canada, Dec. 20, 1971, 130613
Int. Cl. B31b *1/84, 41/60*
U.S. Cl. 93—35 R 11 Claims



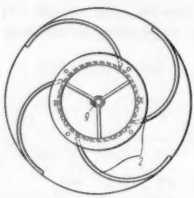
An apparatus and method for the manufacture of bags from a length of plastic film by folding inward and sealing together the longitudinal margins of the film to form a tube, and then sealing the tube transversely. The apparatus can be employed to manufacture valve bags having the valve formed by an unsealed portion of the longitudinal margins of the length of film. The length of film may be constituted by multiple plies of film.

3,812,770

DEVICE FOR AIR DISTRIBUTION IN PREMISES

Vyacheslav Vyacheslavovich Morozov, Lisnaya ulitsa 13, kv. 4, Moscow, U.S.S.R.

Filed Mar. 29, 1971, Ser. No. 128,856
Int. Cl. F24f *13/06*
U.S. Cl. 98—40 D 5 Claims



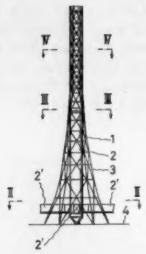
A device, in which a vented rotor is capable of being set in rotation under the effect of an incoming air stream from an air supply duct, whereby an electrical drive for setting the rotor in rotation can be dispensed with, the design of the claimed device is simplified, and it is rendered more economical and efficient than the known air distributing devices.

3,812,771

STEEL-TOWER CHIMNEY

Nobuo Yokoyama, and Takasumi Ujihara, both of Hiroshima, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 20, 1972, Ser. No. 316,673
Claims priority, application Japan, Dec. 21, 1971, 46-2669
Int. Cl. E04h *12/28*
U.S. Cl. 98—60 3 Claims



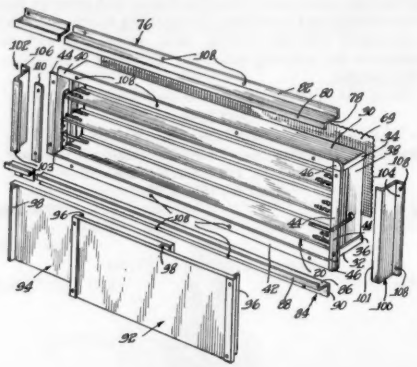
A steel-tower chimney comprising a steel tower for support, and a single stack located inside the tower and communicated to smoke sources, said stack being composed of a lower portion held upright on a foundation and an upper portion connected to the upper end of the lower portion with an expansion joint and formed of walls which are secured to the framework of the supporting steel tower.

3,812,772

VENTILATOR

Steven A. Kaiser, Milford, Ind., assignor to Chore-Time Equipment, Inc., Milford, Ind.

Division of Ser. No. 76,158, Sept. 28, 1970, Pat. No. 3,741,102. This application Dec. 11, 1972, Ser. No. 313,859
Int. Cl. E06b *7/02*
U.S. Cl. 98—110 3 Claims



A unit for ventilating an enclosure such as a poultry or livestock house is disclosed and claimed herein and includes a rectangular frame mountable within a framed opening in a wall of the enclosure for defining an air inlet opening. Negative pressure is created within the enclosure by suitable exhaust fans mounted therein and causes the flow of fresh air to pass through the inlet opening. The direction of this fresh air is controlled by a plurality of elongated adjustable louvers mounted to the frame, while a sliding door assembly independently controls the amount of air which passes through the inlet opening.

3,812,773

COFFEE MAKING MACHINE WITH GRINDING DEVICE AND CENTRIFUGE DRUM

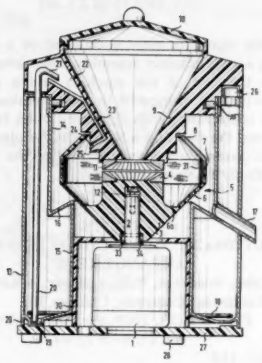
Gunther Hultsch, Max-Wonner-Str. 31, 8 Munchen 50, Germany

Filed Aug. 10, 1972, Ser. No. 279,717

Claims priority, application Germany, Oct. 19, 1971, 2151921; Oct. 19, 1971, 2151920; Nov. 23, 1971, 2157894; Mar. 4, 1971, 2116339

Int. Cl. A47j *31/00*

U.S. Cl. 99—290 24 Claims



A coffee maker having a grinding mill and an extraction basket in coaxial relation in which the extraction basket includes a cylindrical perforated region. The coffee ground in the mill is supplied to the basket and, thereafter, when hot water is supplied to the basket and the basket is rotated the ground coffee forms a layer about the cylindrical perforated region and the hot water passes radially therethrough while simultaneously forming a coffee beverage.

3,812,774

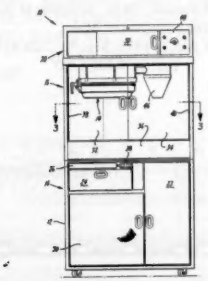
AUTOMATIC POPCORN POPPING MACHINE

Alan M. Day, Oakland, and Gordon D. Browning, Castro Valley, both of Calif., assignors to Compupop, Inc., San Leandro, Calif.

Division of Ser. No. 875,759, Nov. 12, 1969, Pat. No. 3,697,289. This application Aug. 25, 1972, Ser. No. 283,932

Int. Cl. A23l *1/18*

U.S. Cl. 99—323.8 37 Claims



Method and apparatus for automatically popping corn in heated seasoning oil. Raw corn is fed by an air conveyor to a hopper above the popping pot, and an air current is used for injecting a charge of corn and salt into the pot. Seasoning oil is metered into the pot by an adjustable valve providing precise volume measurement. The oil supply is delivered to the metering valve by a pump in an oil vat and with a heater adapted to melt the seasoning adjacent the pump intake, and melt along a telescoping feed tube to prevent pump cavitation. Electronic sensors in the corn and oil supply signal a control circuit for supplies refill as required. A rotary valve disc in the pot is mechanically interlocked with switching circuits of the control system to correlate corn and salt input into the pot, cooking, steam discharge to a condenser, and air discharge of popped corn to a display area. A deflector plate in the air stream into the pot directs the air into a path for optimum corn evacuation through a discharge tube opening downwardly inside the pot. The pot remains closed throughout a series of popping cycles for cleanliness, convenience, and safety. An agitator in the pot is formed in a configuration drawing the popped corn radially inwardly for evacuation into the discharge opening. A self-cleaning condenser is adapted to condense steam and waste oil exiting from the pot and a steam condensate trap is provided in a modified form. A venturi formed at the condenser outlet and communicating with a blower is adapted to create a vacuum in the pot during the popping cycle to prevent effluent from discharging into the display case and to draw it into the condenser. A spring-load agitator drive shaft releasably interlocks with a corresponding socket in the agitator base affording easy opening and closing of the pot by pivotal movement of the agitator and hot plate. "Old maids" in the discharge of popped corn from the pot are trapped and separated therefrom for removal through a chute in one form, or through a screen in the bottom of the display case in another form.

3,812,775

PROCESS AND APPARATUS FOR PREPARING FRIED EDIBLE PRODUCTS

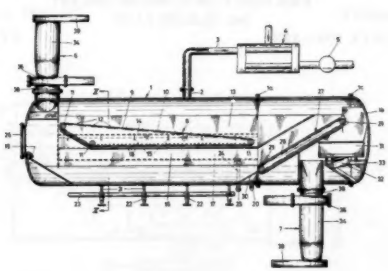
Pieter Herman Sijbring, Rhenen, Netherlands, assignor to Instituent Voor Bewaring En Verwerking Van Landbouxprodukten, Wageningen, Netherlands

Division of Ser. No. 850,290, July 7, 1969, Pat. No. 3,687,679. This application Mar. 9, 1972, Ser. No. 233,373

Claims priority, application Great Britain, Oct. 29, 1968, 51301/68; Netherlands, Oct. 28, 1966, 6615316

Int. Cl. A47j *37/12*

U.S. Cl. 99—404 8 Claims

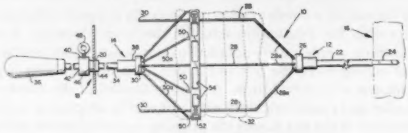


Edible products formed from compositions comprising edible starch materials and containing a sugar are fried in a two-stage operation in an oil such as peanut oil. In the first stage the frying is continued until the moisture content drops to 5 to 20 percent by weight. In the second stage the frying is done under reduced pressure at a temperature of not more than 100°C. and is continued until the moisture content is not more than 2.5 percent by weight.

A suitable oven for carrying out the second stage consists of a closed housing, supply and discharge sluices, suction means for drawing off water vapor and to keep the pressure below at-

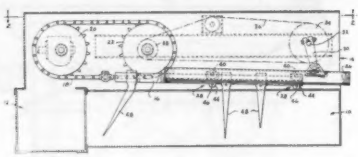
mospheric, conveyor means for moving the edible product toward the discharge outlet and means for removing the fried edible product from the oil before such product reaches the discharge sluice.

3,812,776
CAGE-TYPE ROTARY SPIT
George W. Kean, Woodland Dr., Granby, Conn. 06035
Filed July 21, 1972, Ser. No. 274,099
Int. Cl. A47j 37/04
U.S. Cl. 99—421 H 8 Claims



A two-piece rotary spit for use with an electric drive motor above an open charcoal bed or the like in barbecuing roasts, fowl and the like. Each part of the spit includes an elongated rod section and a cage half section. One rod section has a square end portion for engagement by a drive motor and the other rod section is provided with a handle and an adjustable bearing member. One cage section comprises six (6) equally circumaxially spaced axial members which have extensions inclined inwardly to a hub member on the rod to form a cone-shaped outer cage portion. The other cage half section is similar but includes an annular member having small axial openings for slidably receiving the axial members of the first cage half section. Thumb screws associated with the axial openings secure the cage half sections in assembled relationship and a roast or fowl therewithin is held in a symmetrical and substantially balanced position.

3,812,777
MOUNTING STRUCTURES FOR THE FEED MECHANISM OF A CROP BALER
Robert G. Yound, Bird-in-Hand; Paul S. Trible, Ephrata, and Emmett F. Glass, Akron, all of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.
Filed Sept. 1, 1972, Ser. No. 285,947
Int. Cl. B30b 15/30
U.S. Cl. 100—189 7 Claims

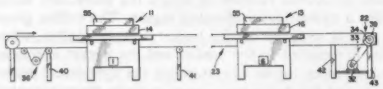


An improved mounting structure for the feed mechanism of a crop baler. The feeding mechanism includes a feed finger support mechanism and a channel assembly, the feed finger support mechanism being slideably interconnected with the channel assembly being supported by a second drive means. Means are provided whereby the feed finger support mechanism may be easily disconnected from its associated drive means, and similarly, means are provided whereby the channel assembly can be easily removed from its associated drive means whereby the feed mechanism for the crop baler can be easily removed from the crop baler for service and the like.

3,812,778
PLATE RETAINER ASSEMBLY
John C. Ziska, Wickliffe, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio
Filed Jan. 19, 1973, Ser. No. 324,937
Int. Cl. B41l 47/04
U.S. Cl. 101—110 3 Claims

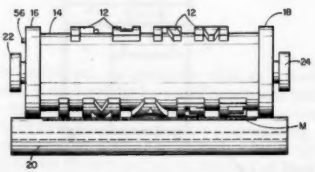
A facsimile signature plate is retained on a data recorder machine by a plate retainer assembly comprising a leaf spring secured to the bed of the machine and a plate retainer mounted on the leaf spring with the plate retainer having locator pins for cooperating with apertures in the facsimile signature plate and the bed and a flange on the plate retainer for pivoting the assembly against the bias of the leaf spring to release the facsimile signature plate.

3,812,779
AUTOMATIC MULTI-COLOR PRINTING ARRANGEMENT
Clyde C. Cobb, Brooklyn, N.Y., assignor to American Screen Process Equipment Company, Chicago, Ill.
Filed May 22, 1969, Ser. No. 826,793
Int. Cl. B41f 15/04
U.S. Cl. 101—115 1 Claim



A multi-color printing arrangement adapted to print cut piece textile goods with different colors without running, smearing, overlapping or the like. Means is provided to assure proper registration of the workpiece carrying the material to be printed, a portion of the registration means also functioning to hold the workpiece during the printing cycle. Means in the novel control circuit permits selection of the duration of the cycle best suited for the ink used.

3,812,780
ELECTROGRAPHIC FORMS PRINT STATION
Ronald F. Borelli, Edmond, Okla., assignor to Honeywell Information Systems Inc., Waltham, Mass.
Filed Jan. 2, 1973, Ser. No. 320,419
Int. Cl. B41f 5/00
U.S. Cl. 101—216 9 Claims



An electrographic printing device is provided with a forms print station including an electrode drum having forms information raised thereon which operates on a dielectric print

medium. The forms print station provides means for the rapid printing of various size forms on the print medium which are then transported through the electrographic printing device for the addition of variable information at a print station downstream thereof.

3,812,781

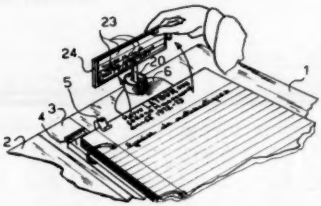
WRITING PAD HOLDER WITH IDENTIFICATION AND PRINT MEANS

Claude Bissonet, 3747 Coronet Rd., Apt. 10, Montreal, Quebec, Canada

Filed Jan. 31, 1973, Ser. No. 328,343

Int. Cl. B41f *1/48, 1/02*

U.S. Cl. 101—298 **9 Claims**



A writing pad holder such as a binder or folder for sheets of paper or the like comprising a base panel including a cover forming a folder therewith to hold the sheets of paper, a visual owner's identification plate pivoted onto said base panel about an upright and a transverse axis relative thereto to adjust the horizontal and vertical directions of the owner's identification plate, a printing plate secured on one side of the latter to print owner's identification onto the paper, an ink pad slidable over the printing plate and a window into the cover to register with the visual owner's identification when the cover is closed.

3,812,782

SELF-INKING ROLLER

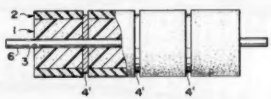
Takaji Funahashi, No. 1, 2-chome, Kitatakasho-machi, Nagoya, Japan

Filed Dec. 14, 1972, Ser. No. 315,188

Claims priority, application Japan, Dec. 17, 1971, 46-119655; July 13, 1972, 47-82837; Sept. 4, 1972, 47-103117; Nov. 7, 1972, 47-128162; Nov. 7, 1972, 47-128163

Int. Cl. B41f *31/22*

U.S. Cl. 101—367 **12 Claims**



A self-inking roller comprising an inner cylindrical member made of porous synthetic polyvinyl formal resin having innumerable fine continuous pores, and an outer cylindrical member concentrically mounted over the outer surface of the inner cylindrical member and made of sponge rubber having innumerable fine continuous pores.

3,812,783

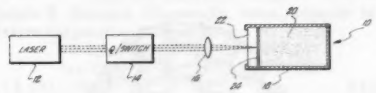
OPTICALLY DETONATED EXPLOSIVE DEVICE

Lien C. Yang, Los Angeles, and Vincent J. Menichelli, Glendale, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 3, 1972, Ser. No. 277,904

Int. Cl. F42c *13/02*; **F42d** *1/04*; **F42c** *19/08*

U.S. Cl. 102—70.2 R **14 Claims**



A technique and apparatus for optically detonating insensitive high explosives, is disclosed. An explosive device is formed by containing high explosive material in a housing having a transparent window. A thin metallic film is provided on the interior surface of the window and maintained in contact with the high explosive. A laser pulse provided by a Q-switched laser is focussed on the window to vaporize the metallic film and thereby create a shock wave which detonates the high explosive. A plurality of explosive devices may be concurrently or sequentially detonated by employing a fiber optic bundle to transmit the laser pulse to each of the several individual explosive devices.

3,812,784

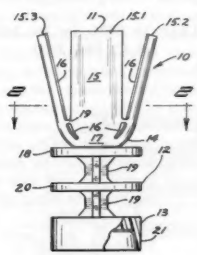
ONE PIECE WAD COLUMN AND SHOT CUP

George L. Herter, Waseca, Minn., assignor to Herter's, Inc., Waseca, Minn.

Filed Jan. 17, 1972, Ser. No. 218,231. The portion of the term of this patent subsequent to Mar. 27, 1990, has been disclaimed.

Int. Cl. F42b *7/08*

U.S. Cl. 102—95 **3 Claims**



A one piece shot cup and gas sealing wad column for a shotshell wherein the shot cup is supported upon a transverse disc and has a partially spherically rounded bottom, the cup sidewalls having slits extending into the rounded bottom, and the cup having bridging strips traversing the slits adjacent the bottom of the cup.

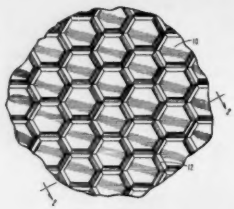
3,812,785
PROPELLANT FORMED CURE-SHRINKABLE PROPELLANT MATERIAL

Joseph Cohen, Carmichael, Calif., and Ralph Scotoni, Jr., Eifeld, Switzerland, assignors to Aerojet-General Corporation, El Monte, Calif.

Continuation-in-part of Ser. Nos. 384,821, July 21, 1964, abandoned, and Ser. No. 790,180, June 28, 1968, abandoned. This application Mar. 30, 1970, Ser. No. 23,895

Int. Cl. F42b *1/00*

U.S. Cl. 102—100 **21 Claims**



This patent describes a novel caseless ammunition comprising a solid unitary propellant grain of generally uniform circular cross-section and containing a plurality of longitudinal openings therein extending the length of said grain to provide increased burning surface. The ammunition is prepared by adding a flowable, curable propellant to a generally enclosed mold of circular cross-section containing a plurality of longitudinally extending pins, curing said propellant, and removing the mold including the pins.

This patent also discloses a novel solid-rocket motor comprising a plurality of spaced-apart free-standing propellant grains cast in a rocket motor casing. A method for forming a novel propellant grain structure in a motor chamber which comprises inserting a separator which divides the chamber into a plurality of smaller chambers, filling the chamber with a propellant which shrinks upon curing, and curing the propellant. A method for forming a novel propellant grain structure in a motor chamber which comprises casting the propellant, chosen from a class which has the characteristic of shrinking upon curing, around lengthwise positioned mandrels coated with a mold release agent, curing the propellant, removing the mandrels to provide spaces in the structure and casting and curing additional propellant in the spaces provided by the mandrels.

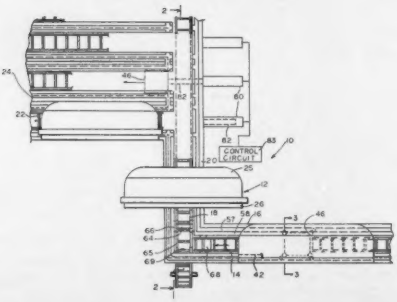
3,812,786
CONVEYOR APPARATUS

Robert L. Cahn, 257 Grand Central Ave., Amityville, N.Y 11701

Filed Apr. 18, 1972, Ser. No. 245,136

Int. Cl. B61j *3/00*

U.S. Cl. 104—88 **9 Claims**



Conveyor apparatus for receptacles comprising an assembly of vertical and horizontal tracks with the horizontal tracks disposed at different elevational levels. A drive means moves receptacle holders along the tracks and electromechanical switching devices shift the receptacle holders between the vertical and horizontal tracks.

3,812,787
CONVEYOR COMPRISING A PLURALITY OF DRIVE MEANS FOR SUCCESSIVELY DRIVING A LOAD CARRIER

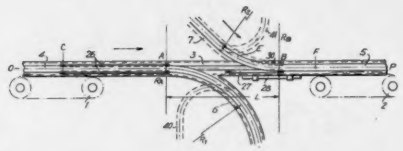
Georg Kling, Bonn, Germany, assignor to Pohlig-Heckel-Bleichert Vereinigte Maschinen-fabriken Aktiengesellschaft, Cologne, Germany

Filed Nov. 1, 1971, Ser. No. 194,321

Claims priority, application Germany, Oct. 31, 1970, 2053658

Int. Cl. B61j *3/04*

U.S. Cl. 104—96 **16 Claims**



Conveyor comprising a plurality of drive means for driving a load carrier in a successive manner. The load carrier is carried by wheels movably supported on at least one track rail and adapted to be coupled to a drive chain which is guided by a drive rail and provided with coupling elements. The load carrier includes a main stop movable into and out of the path of a coupling element, and a locking pawl, with the main stop extending therebetween. First and second camming bars of predetermined lengths are positioned respectively above and below the track rail at distances to each other with at least a portion of the second camming bar extending into a transfer section so as to maintain the main stop in predetermined inoperative relationship until the main stop has been conveyed beyond that transfer section.

3,812,788
TRANSPORT INSTALLATION WITH INDEPENDENT VEHICLES

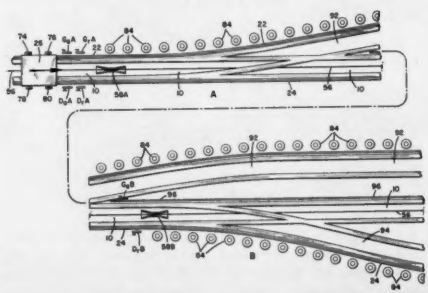
Roger Laurent, Chambery, France, assignor to Poma 2.000 S.A., Fontaine, France

Filed Apr. 4, 1972, Ser. No. 240,963

Claims priority, application France, Apr. 7, 1971, 71.12413

Int. Cl. E01b *25/12*

U.S. Cl. 104—130 **10 Claims**



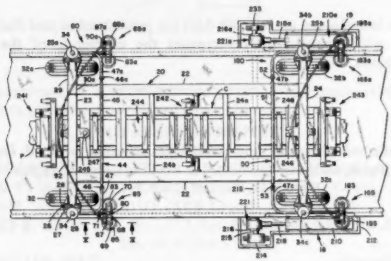
A high-capacity transport installation making use of passive vehicles of low passenger capacity but moving at a high

frequency, hauled along a main track by a continuously moving traction cable. Bifurcations of the track at the level of the stations permit a deviation of the vehicles, without previous slowing down, on to a loop line where they are taken over by a drive system with friction wheels. The section of the track above the bifurcation is equipped with two guide rails, each of which extends along one of the tracks below the bifurcation. The track to be followed the vehicles is determined by guide components carried by the vehicles.

3,812,789
TRANSPORTATION SYSTEM

Roy A. Nelson, Grand Prairie, Tex., assignor to LTV Aerospace Corporation, Dallas, Tex.

Filed Oct. 13, 1972, Ser. No. 298,716
Int. Cl. B61b 5/02
U.S. Cl. 104—130 **13 Claims**

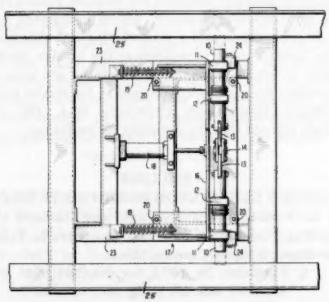


A transportation system having a roadway and a plurality of vehicles movable over the roadway, the roadway having parallel guide rails between which the vehicles move, the vehicles having pairs of front and rear wheels which are turned as required by individual guide and steering means engageable with the guide rails for guiding movement of the vehicles along each section of the track and for selectively steering or switching the vehicles from one section of the roadway to another which extends angularly therefrom.

3,812,790
DYNAMIC STOP

Hans-Udo von Tresckow, Muehlenstrasse, Germany, and Calvin R. Davis, Birmingham, Mich., assignors to Rexnord Inc., Milwaukee, Wis.

Filed Nov. 24, 1972, Ser. No. 309,373
Int. Cl. B61k 7/00
U.S. Cl. 104—252 **3 Claims**

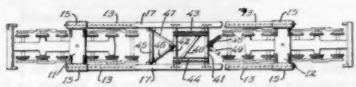


A dynamic stop for an operator-less, remotely controlled unit carrier system consisting of a pair of stopping bars positioned between the tracks of the carrier system and mounted so that they do not interfere with the passage of the cars of the unit carrier system when not in use, but may be extended into an outward position so that they will contact stopping brackets on the underside of a car which it is desired to stop. The dynamic stop may be mounted on a reciprocating device to absorb the energy of contact.

3,812,791
ADJUSTABLE FLAT CAR

Benjamin R. Barnard, Minnetonka, Minn., assignor to The Maxson Corporation, Ramsey, Minn.

Filed July 27, 1972, Ser. No. 275,747
Int. Cl. B61d 3/16, 5/00; B61f 01/00
U.S. Cl. 105—393 **6 Claims**

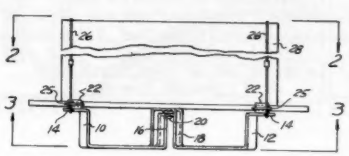


An adjustable length railroad flat car having slideable body bolsters resting directly on the center of the rail trucks and adaptable to slide along two side sills so as to be able to carry heavy vessels or structures of varying lengths directly on the rail trucks.

3,812,792
COLLAPSIBLE PALLET FOR FREIGHT AND CARGO

Clayton J. La Belle, River Rouge, Mich.

Filed July 5, 1973, Ser. No. 376,424
Int. Cl. B65d 19/00
U.S. Cl. 108—56 **4 Claims**



A collapsible load-supporting pallet having a pair of elongated members with an upright arm on each end. A raised central portion in each of the elongated members has a vertically disposed pintle therethrough pivotally connecting the two elongated members. A flat member is removably supported by the upright arms and the raised central portions on the elongated members. A laterally disposed clip pivotally attached to each of the upright arms, releasably holds the flat member in its assigned position on the elongated members. A resilient member on the pintle yieldably urges the two elongated members apart so that they may be pivoted together to facilitate storage when the flat member is removed.

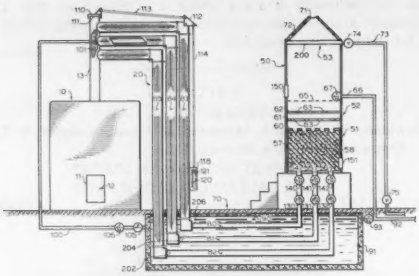
3,812,793
APPARATUS FOR TREATING NOXIOUS EFFLUENTS

Raymond Lewis Solomon, Deming, N. Mex., assignor to William J. Trayler and Lois J. Trayler, both of Edmund, Ohio, part interest to each

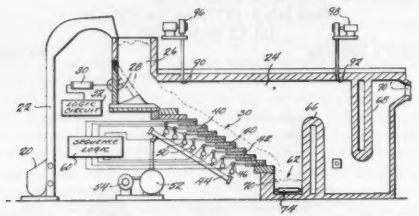
Filed Apr. 19, 1972, Ser. No. 245,334
Int. Cl. F23g 3/00
U.S. Cl. 110—8 R **4 Claims**

A system of uncomplicated structure which lends itself to unskilled manual operation for treating the output of a furnace, burner, or the like, in which the furnace output is

cooled, directed and forced into a treating tank containing a scrubbing fluid, and exposed to a burner flame before being discharged into the atmosphere. The system is of particular use in ensuring that the output from the burner or furnace contains no noxious effluents.



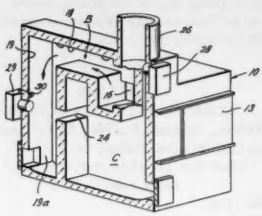
3,812,794
STAIRSTEP JET PULSE INCINERATOR
Fred W. Taylor, 60 Village Cir., Bartow, Fla. 33830
Filed Sept. 21, 1972, Ser. No. 291,029
Int. Cl. F23g *3/00*
U.S. Cl. 110—8 R **11 Claims**



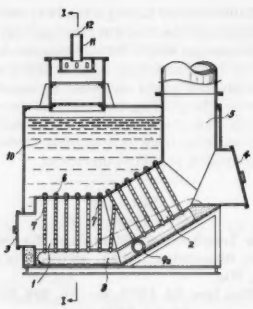
An improved combustion furnace having a grate formed as a plurality of downward leading steps from an upper to a lower region with a number of separated, outwardly flaring openings among the steps, and a source of air connected to the openings by valves which can be sequentially actuated to supply pulses of air which promote combustion as the air penetrates into and among the burning material and at the same time moves the burning material down the grate.

3,812,795
INCINERATOR
Harry L. Bowles, Jr., Houston, Tex., assignor to Austral Incinerator Corporation, Houston, Tex.
Filed Mar. 14, 1973, Ser. No. 341,305
Int. Cl. F23g *5/12*
U.S. Cl. 110—8 C **12 Claims**

An incinerator apparatus for burning waste material wherein a primary chamber is connected to a secondary chamber through an angular duct or passageway of predetermined size and configuration and a nozzle or opening of a preselected size, whereby the velocity of flow of the products of combustion through the apparatus, and particularly through the nozzle or opening, is controlled to maintain the proper draft and the desired dwell time of the combustion products within the apparatus to assure complete oxidation of said products prior to their exit from the usual flue stack. Additionally, a secondary burner is located in such relationship to the nozzle or opening that the products of combustion must pass through the burner flame, and also secondary air inlets for introducing air into the duct are positioned in said duct, all of which substantially increases the efficiency of the apparatus.



3,812,796
REFUSE INCINERATOR
Tadayoshi Nagata, and Wahei Hamanaka, both of Osaka, Japan, assignors to Iwatani & Co., Ltd., Osaka, Japan
Filed Mar. 22, 1973, Ser. No. 343,735
Int. Cl. F22b *33/18*
U.S. Cl. 110—10 **6 Claims**

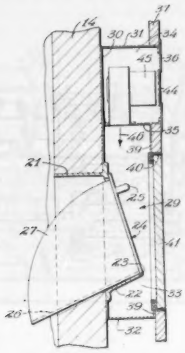


A refuse incinerator adapted for burning plastic refuse in a sanitary and efficient manner, which comprises a primary combustion chamber and a secondary combustion chamber, the latter being slanted in relation to the former, such that the secondary combustion chamber functions not only as a furnace chamber but also as a passageway for refuse moving into the primary combustion chamber, thus, the refuse is completely burned thereby avoiding air pollution.

3,812,797
SMOKE ELIMINATOR DUMP CHUTE DOOR
Robert H. Wieken, West St. Paul, and Harland C. Potter, White Bear Lake, both of Minn., assignors to Temperature Control Inc., Ramsey County, Minn.
Filed Oct. 26, 1972, Ser. No. 301,151
Int. Cl. F23g *3/00*
U.S. Cl. 110—18 A **8 Claims**

An apparatus for preventing smoke leakage from chimneys provided with dump chute doors is provided. The device includes an enclosure encircling the dump chute door, and an

access door in the enclosure providing access to the dump chute door. Means is provided for subjecting the interior of



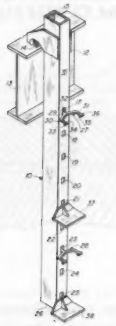
the enclosure to a slight positive pressure to overcome any position pressure experienced in the chimney.

3,812,798

MOUNTING MEANS FOR A REFRACTORY SHIELD

Frank P. Merkle, Jr., R.R. 2, Farmington, Long Grove, Ill. 60047

Filed Feb. 28, 1973, Ser. No. 336,629
Int. Cl. F23m *5/08*
U.S. Cl. 110—99 R **12 Claims**



Mounting means for a suspended refractory shield such as a furnace wall or roof in a high temperature furnace comprises a support beam providing structural support for the refractory shield, a hollow, structural hanger tube depending from the support beam, metal hanger means engaging the hanger tube through oblong openings provided therein, and a cooling fluid supply means communicating with the hanger tube through the open end thereof. In use, a cooling fluid is passed through the oblong openings and cools the metal hanger means.

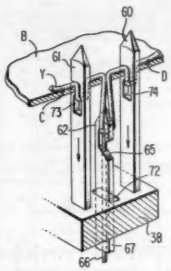
3,812,799

METHOD AND MEANS OF TUFTING

Abram N. Spanel, 344 Stockton St., Princeton, N.J. 08540; Bernard H. Wittler, Dover, and Nichloas Leszczak, Point Pleasant, both of N.J., assignors to said Spanel, by said Leszczak and Wittler

Filed Apr. 21, 1972, Ser. No. 246,305
Int. Cl. D05c *15/10*
U.S. Cl. 112—79 R **20 Claims**

A method and means for use in pneumatic multi-color tufting and other tufting systems wherein at each tufting needle station three needles with linearly aligned eyes are disposed to receive yarn for tufting. In a preferred embodiment the yarn is cut into a discrete yarn bit prior to tufting and may be clamped at the central needle which, of the three needles, may be the first to descend through the backing. The central needle descent is followed by the descent of the two outer needles which pull the remainder of the yarn bit through the backing



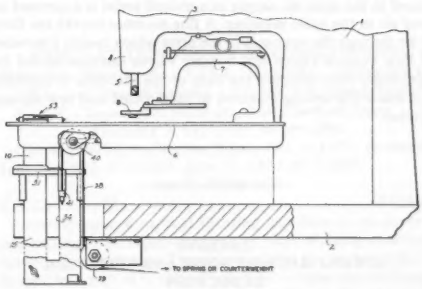
layer thereby implanting a series of tufts in the backing layer. The central needle may have an open eye for creating loop tufts or it may have a closed eye in which case a knife member will be used to release the yarn from the central needle to form cut tufts. A single member may serve dual functions; first as a clamp until the yarn is deposited in the backing to a desired point and then serving as a knife when the yarn is to be cut and released from the eye of the central needle.

3,812,800

LABEL ATTACHING MACHINE

Arnold H. Ziegler, New City, and George J. Schweitzer, Lake Grove, both of N.Y., assignors to Gellman Industries, Inc., New York, N.Y.

Filed July 31, 1973, Ser. No. 384,183
Int. Cl. D05b *3/12*
U.S. Cl. 112—104 **9 Claims**

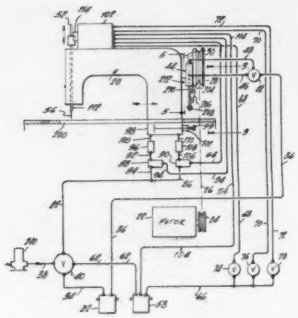


In a label attaching machine attachment for sewing machines, a label magazine containing a stack of labels is mounted below the worktable and labels are fed upwardly by pressure applied to the bottom of the stack to a label feeding position when the topmost label is engaged by a picker finger mounted on a reciprocating carriage which moves the label to an attaching station.

3,812,801
PNEUMATIC DRIVE SYSTEM FOR A SEWING MACHINE

Nick Lukowicz, 48 Kilburn Ave., Huntington Station, N.Y. 11746

Filed Jan. 19, 1973, Ser. No. 325,167
Int. Cl. D05b 3/00, 69/08
U.S. Cl. 112—121.14 6 Claims



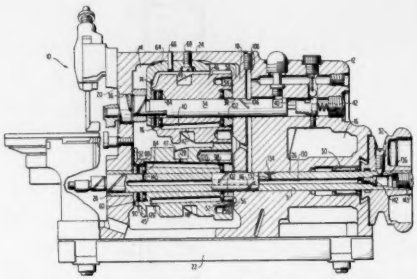
A pneumatic drive system for controlling the stitching direction of a sewing machine including a base and having a needle bar with a sewing needle driven between uppermost and lowermost position by a motor connected to the sewing machine through a clutch comprising a main air supply, a clutch air control cylinder, a clevis assembly connecting between the clutch air control cylinder and the clutch a four-way air control valve, and various pneumatic lines interconnecting the clutch air control cylinder, the four-way air control valve and a main air regulator that connects to the main air supply, so that the sewing needle sews straight stitches as a foot pedal is depressed closing the various pneumatic lines between the main air supply and clutch air control cylinder and releasing the clutch. A brain member connects to the machine, and a jet sensor is attached to the brain member and has a structure defining a substantially U-shaped member having at least one opening in each arm through which air from the brain member flows. Various pneumatic lines and regulator valves interconnect with the main air regulator and are closed to the main air supply as a second pedal is depressed to send air to the brain member. A flag member breaks the flow of air through the openings in the arms which causes a number of flow control valves and booster valves interconnected by pneumatic lines to cause the base of the machine to oscillate and cause the sewing machine to reciprocate and sew zig-zag stitches.

3,812,802
SEWING MACHINE NOISE AND VIBRATION REDUCTION

Bernard N. Pierce, West Hartford, Conn., assignor to The Merrow Machine Company, Hartford, Conn.

Filed May 3, 1973, Ser. No. 356,851
Int. Cl. D05b 69/02
U.S. Cl. 112—218 R 6 Claims

Noise and vibration are reduced in an axial cam drive mechanism by spring loading the rotary cam assembly to one end of its limit of axial travel. The spring load is applied through an antifriction axial thrust bearing, and is reacted by a second antifriction axial thrust bearing. The spring load applied exceeds the axial component of the maximum reaction load applied by the cam driven mechanism during operation

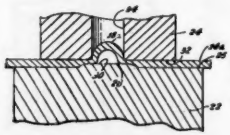


so that there is no tendency of the rotary cam assembly to shift axially upon reversal of the reaction load.

3,812,803
METAL FORMING

Omar L. Brown, Dayton, Ohio, assignor to Ermal C. Fraze, Dayton, Ohio

Continuation-in-part of Ser. No. 288,204, June 17, 1963, abandoned. This application June 18, 1965, Ser. No. 464,909
Int. Cl. B21d 51/38
U.S. Cl. 113—121 C 7 Claims



An upstanding hollow rivet is formed in a metal can end by pressurally engaging opposite sides of the can end with a pair of die elements, one of which is formed with a recess. The dies place a continuous zone of the can end under compressive stress sufficient to cause metal of the zone to be forcibly displaced into the die recess with consequent thinning of the compressed area whereby an integral rivet is formed which comforms to the size and shape of the die recess.

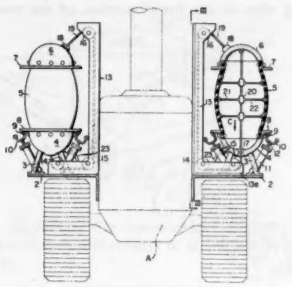
3,812,804
APPARATUS FOR FLOATING A VEHICLE FOR UNDERWATER OPERATION

Yoshihiro Nagata; Tadashi Yoda, and Yoshinobu Tanaka, all of Osaka, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed July 29, 1971, Ser. No. 167,344
Claims priority, application Japan, July 29, 1970, 45-65762
Int. Cl. B63g 8/00, 8/14
U.S. Cl. 114—16 R 4 Claims

An apparatus for floating a vehicle for operating under

water and which has a pair of floats each having upper and lower convex members and a resilient cylinder and secured to



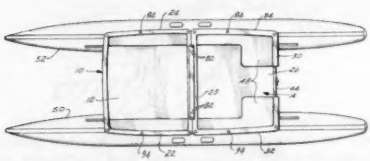
both sides of the vehicle, and pipes for feeding compressed air to the floats.

3,812,805

INFLATABLE PONTOON BOAT

Dag C. G. Forssell, Manhattan Beach, and Henry J. Folson, Redondo Beach, both of Calif., assignors to Vector Company, Manhattan Beach, Calif.

Filed Oct. 12, 1972, Ser. No. 296,784
Int. Cl. B63b *1/12, 7/08*
U.S. Cl. 114—61 **12 Claims**



There is described a boat having two rubberized fabric inflatable pontoons and two separate open box-like hulls. The hull sections are joined to the pontoons by a beading on the pontoons which engages slots on either side of the hull sections. The pontoons are locked into position when they are inflated.

3,812,806

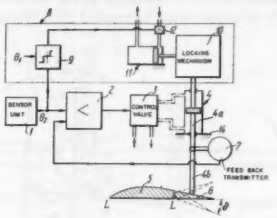
AUTOMATIC STABILIZATION SYSTEM FOR HYDROFOIL CRAFT

Mikhail Mikhailovich Korotkov, Sormovskoe shosse, 3, kv. 2; Stanislav Nikolaevich Suldin, ul. Geroev Kosmosa, 24, kv. 12, and Alexandr Ivanovich Vasin, Bulvar Jubileiny, 7, kv. 17, all of Gorky, U.S.S.R.

Filed Aug. 16, 1972, Ser. No. 281,013
Int. Cl. B63b *1/28*
U.S. Cl. 114—66.5 H **3 Claims**

A system comprising a sensor unit serving to control hydraulic cylinders which actuate the control surfaces of foils and incorporating automatic interlocking means assuring safe operation of the craft.

The automatic interlocking means comprise an electronic relay with adjustable setting and locking mechanisms for



setting the control surfaces of foils into the neutral positions should the craft exceed the maximum preset angles of deviation.

3,812,807

CARGO VESSEL FOR CARRYING LIQUID CARGO

Shigemi Ando, Chiba, Japan, assignor to Mitsui Shipbuilding and Engineering Co. Ltd., Tokyo, Japan

Filed Dec. 1, 1971, Ser. No. 203,529
Claims priority, application Japan, Apr. 14, 1971, 46-23556
Int. Cl. B63b *25/08*
U.S. Cl. 114—74 R **1 Claim**

Cargo vessel for carrying liquid cargo provided for preventing outflow of a large amount of cargo oil. The vessel is provided with separating bulkheads for partitioning each subdivision divided by oiltight bulkheads, and each separating bulkhead having a valve for communicating between subdivisions on both sides thereof.

3,812,808

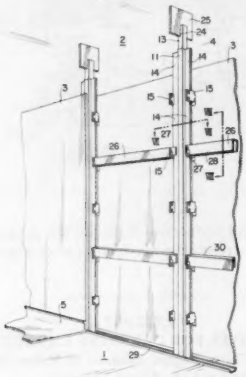
SHIP PARTITION AND LINING CONSTRUCTION

Masahiko Shirota, No. 2-15-4, Hiratsuka, Shinagawa-ku, Tokyo, and Tomoji Nagano, 1-11-409, Chayamadai-danchi, No. 2-1, Chayamadai, Sakai-shi, Osaka, both of Japan

Filed Oct. 2, 1972, Ser. No. 293,894
Claims priority, application Japan, Oct. 2, 1971, 46-90526; June 30, 1972, 47-77995; June 30, 1972, 47-77996
Int. Cl. B63b *3/56*
U.S. Cl. 114—78 **9 Claims**

Laterally spaced vertical securing members in the form of telescoping tubes support respective sides of lining panels extending therebetween. The outer tubular support member is formed by a pair of U-shaped members whose vertical flanges extend outwardly therefrom in the plane of the panels, lie face-to-face and carry hooks which extend at right angles away from the flanges at their outer edges on both sides of the outer support member. Slots within the panels of a width in excess of the hooks and at positions corresponding to the hooks permit the panels to be hung thereon. The panels terminate in L-shaped recesses at their edges and an L-shaped vibration dampener is sandwiched within the recess and between the panel and right angle wall portions of the outer vertical tubular support member.

The inner telescoping tubular member may be slotted at the top at right angles to the plane of the panel supported thereby, and a plate is welded within the slot and to the upper deck to securely position the vertical support member. U-shaped



backing spacers having a lengthwise dimension corresponding to the lateral width of the partition and lining are slotted adjacent both ends to receive the hooks and retain adjacent vertical support members at desired spaced intervals.

3,812,809

CRINGLE ASSEMBLY

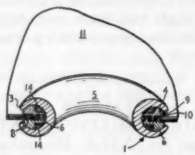
Paul Mervyn Salmon, Marrickville, New South Wales, Australia, assignor to William Adams & Company Limited (Manufacturing Division), Marrickville, New South Wales, Australia

Filed Sept. 1, 1972, Ser. No. 285,618

Claims priority, application Australia, Sept. 2, 1971, 6148/71

Int. Cl. B63h *9/08*

U.S. Cl. 114—114 **2 Claims**



The invention relates to a cringle assembly for mounting in a sail in which the assembly includes a sleeve and a pair of rings which clamp the rings together around a hole in the sail and the invention provides a means for securely clamping the rings by the sleeve without the likelihood of the rings working loose under the strain applied by the sail securing rope attached to the assembly.

3,812,810

CONTROLLED EXPANSION MARINE PLUG

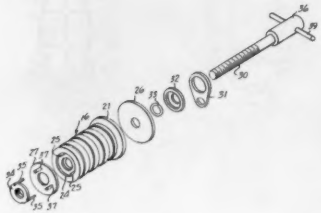
Axel Moeller, St. Petersburg Beach, Fla., assignor to Moeller Manufacturing Co., Inc., Greenville, Miss.

Filed Mar. 2, 1973, Ser. No. 337,291

Int. Cl. B63b *13/00*

U.S. Cl. 114—197 **5 Claims**

A bailer plug is described comprising a resilient compressible stopper body having resilient sealing ribs, in which the grooves between the ribs are of reduced height so as to provide quicker purchase on the interior of the thimble in which the plug is inserted. The threaded stem, attached to a turning handle, engages a threaded plate having upstanding fingers received in slots in a lower compression plate and in corresponding slots in the lower portion of the resilient com-



pressible stopper body. This arrangement prevents overturning with consequent rubber flow over the end of the plug and loss of the seal. In order to prevent leakage of water through the plug, an O-ring of compressible material is provided between the upper compression plate and the stem.

3,812,811

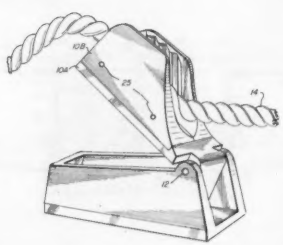
ROPE RETAINING CLEAT WITH AUTOMATIC RELEASE

Bernard Rodriguez, R.D. No. 2, Box 375, Highland, N.Y. 12528

Filed Nov. 14, 1972, Ser. No. 306,182

Int. Cl. F16g *11/00*

U.S. Cl. 114—218 **4 Claims**



A pivotally mounted rope retaining cleat for sailboats having a pressure retarding action to the pivotal movement of the cleat and a releasing action at the full movement of the cleat to release the sail rope and more particularly for use on a catamaran or trimaran sailboat where the sail retaining rope may be set in a cleat to hold the sail at a preferred sailing angle and in the event of a strong wind, the cleat will release the sail rope automatically and prevent the possibility of an overturned or capsized sailboat.

3,812,812

TROLLING PROPELLER WITH SELF ADJUSTING HYDRODYNAMIC SPOILERS

Mathew Hurwitz, 63 Oakland Ave., Auburndale, Mass. 02166

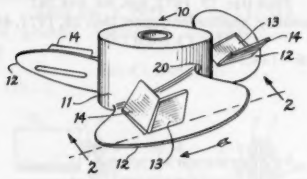
Filed June 25, 1973, Ser. No. 373,397

Int. Cl. B63h *1/14*

U.S. Cl. 115—34 R **3 Claims**

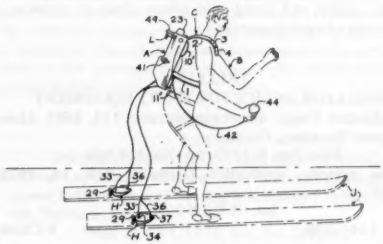
A marine propeller carrying a plurality of hydrodynamic spoilers formed of elastomeric material which self-deploy at low engine speeds to present maximum effective fluid contacting areas impeding propeller flow, said effective areas being progressively reduced as the propeller speed progressively is

increased or its direction of rotation reversed. The propeller manifests a greater-than-normal slip coefficient at low engine



speed thus, decreasing the minimum trolling speed without sacrificing performance in reverse or at intermediate and high engine speeds.

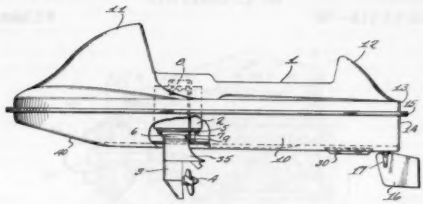
3,812,813
SHOULDER PACK POWER UNIT FOR PROPELLING WATER SKIS OR SURF BOARDS
Wayne D. Dickson, P.O. Box 574, Forest Grove, Oreg. 97116
Filed Nov. 6, 1972, Ser. No. 303,680
Int. Cl. B63b *35/00*
U.S. Cl. 115—70 **8 Claims**



A shoulder pack containing a light weight engine for propelling water skis or a surf board on which the operator stands, propulsion units being mounted under the skis or surf board and novel means being provided for operatively connecting the engine to the propulsion units with hand operated means for controlling the speed of the engine, thereby controlling the speed of the skis or surf board. The novel means that connects the engine to the propulsion units can be quickly disconnected from them for freeing the propulsion units and skis or surf board from the power pack when desired. I also provide novel means for quickly freeing the shoulder pack power unit from the back of the operator in case of an emergency and the power pack is so designed that it can float in water with the air intake to the engine and its exhaust pipes being positioned above the water surface so that the engine can still keep operating if desired. Automatic float controlled check valves prevent any entrance of water into the air intake or exhaust pipes and also prevent any spillage of gasoline into the water.

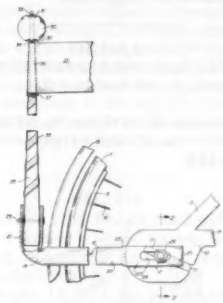
3,812,814
WATER VEHICLE
Joseph C. Veilleux, St. George, Quebec, Canada, assignor to Moto-Naute, Inc., Quebec, Canada
Filed May 18, 1973, Ser. No. 361,620
Int. Cl. B63b *35/00, 1/00*
U.S. Cl. 115—70 **18 Claims**

A power boat with a generally mid-ship mounted motor and propeller is provided. A rudder is disposed at the rear of the boat and generally on the longitudinal center line thereof. Straightening vanes are mounted longitudinally on the underside of the hull with the rearwardmost portion thereof located generally adjacent the forwardmost portion of the rudder. The vanes extend forwardly a distance of about one-tenth the length of the entire hull. Longer protuberances on the hull ex-



tend longitudinally from a forward position near the propeller to a rearward position near the rudder. The longer protuberances lie on opposite sides of the center line of the hull. A third shorter protuberance extends rearwardly from the propeller toward the rudder and along the center line of the hull. The hull has a convex shape relative to the water line.

3,812,815
SAFETY ATTACHMENT
Robert R. Kuenzel, 2706 Gilbert, Missoula, Mont. 59801
Filed Jan. 10, 1973, Ser. No. 322,295
Int. Cl. B60q
U.S. Cl. 116—28 R **11 Claims**

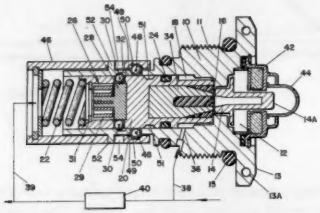


The safety attachment is for a vehicle of the type having a frame with an elongated slot through which an axle perpendicularly extends and along which the axle may be slidably adjusted and fixed at different locations. The safety attachment comprises an elongated member with the opposite ends thereof extending as arms in angular relationship to each other. One of the arms comprises a vehicle mounting bracket and the other a holder member. The vehicle mounting bracket includes a substantially flat arm portion having an opening therein for reception of an end of the vehicle axle therethrough, plus a rigid pin projecting substantially perpendicularly away from the flat arm portion at a location spaced from the axle-receiving opening. The pin is adapted to project into the elongated slot of the vehicle frame and ride in that elongated slot. Fixing of the mounting bracket to the vehicle is accomplished by sliding the opening of the substantially flat arm portion over the axle and simultaneously inserting the pin into the elongated slot of the vehicle frame, thereby to substantially prevent pivoting of the bracket about the axle. A resilient pole, suitably fluorescent for attention-getting qualities, is carried by the arm forming the holder member; and a ball and flag may be carried by the pole. The safety attachment creates a high profile for low profile vehicles.

3,812,816
DIFFERENTIAL PRESSURE INDICATOR WITH INTERNAL RESET

Charles Juhasz, West Caldwell, N.J., assignor to The Carborundum Company, Niagara Falls, N.Y.

Filed Mar. 1, 1972, Ser. No. 230,880
Int. Cl. G01l 19/12
U.S. Cl. 116—70 8 Claims

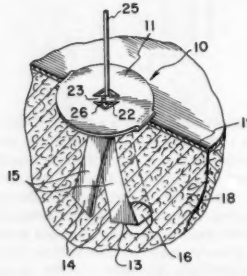


A differential pressure indicator is described in which a pressure sensitive means is arranged to respond to an increase in differential pressure within a fluid system. This means is operatively associated with an indicator which provides a signal when the differential pressure in the fluid system exceeds a set limit. At this point, the pressure sensitive means is locked in place and neither the indicator signal or the pressure sensitive means can be reset until the cause of the increased differential pressure is corrected. A thermally sensitive element is incorporated in the pressure sensitive means to prevent false pressure responses when the fluid may be in a more viscous state at low temperature.

3,812,817
SHEET METAL NAIL AND APPARATUS FOR TESTING

Robert L. Hallock, Jr., 48 Rockland Ave., Larchmont, N.Y. 10538

Filed Jan. 29, 1973, Ser. No. 327,254
Int. Cl. G01d 21/00
U.S. Cl. 116—114 R 4 Claims

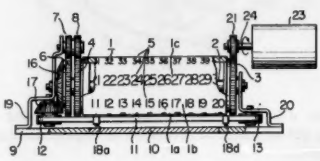


A hollow sheet metal nail apparatus and apparatus for testing the holding capacity of the nail in which the nail apparatus includes a head connected to a shank constructed of a pair of legs joined to the head by a flexible connection in such a manner that the legs are free to move apart along their lengths. The head of the nail includes a frangible portion which is adapted to rupture when a predetermined force is applied thereto. The apparatus for testing the nail includes an elongated shank with a hook portion at one end to engage the frangible portion of the nail and arranged to facilitate the application of an axial force on the testing apparatus so that the nail can be tested without destroying such nail.

3,812,818
INDICATOR DEVICE

Shigeto Saruwatari, Chigasaki, Japan, assignor to Matsushita Electric Industrial Co., Ltd, Osaka, Japan

Filed Dec. 27, 1972, Ser. No. 318,767
Claims priority, application Japan, Dec. 28, 1971, 46-3902
Int. Cl. H03j 1/02
U.S. Cl. 116—124.1 4 Claims

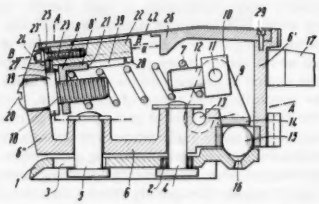


An indicator device which is small in size but large in indication capacity and adapted for use in television receiving sets for indicating the channel numbers of VHF and UHF telecasting stations, said indicator device having a rotary drum bearing on the outer peripheral surface characters desired to be indicated arranged in groups in the axial direction of said drum and driven automatically intermittently, and pointers being movable axially and along said rotary drum to point to a selected one of said characters.

3,812,819
INDICATOR DEVICE FOR SPORT EQUIPMENT

Paul Sebastian Unger, Bruckwiesenstrasse 113, 8501 Altenberg near Nurnberg, Germany

Filed Feb. 9, 1972, Ser. No. 224,908
Claims priority, application Germany, Feb. 16, 1971, 2107252
Int. Cl. G09f 9/00
U.S. Cl. 116—135 8 Claims



Indicating device for sport equipments that operate against the effect of an adjustable spring or for associated equipments which measure the force of the spring, comprising an indicator coupled with the spring adjusting means which participates in the movement of the adjusting means the position of which can be read on a scale, the indicating device which includes first and second retaining means for supporting the spring at opposite ends has spring adjusting means at one end of the spring which supports the indicator, scale means extending adjacent the first retaining means, the indicator and the spring adjusting means, the scale setting means being operable to displace the scale means in the direction of adjustment of the spring, while the adjusting means and spring setting means each include an adjusting screw that is accessible from the exterior of the housing and stop abutments are disposed at opposite ends of the scale means for limiting the extreme adjustable positions of the spring.

3,812,820

MACHINE FOR APPLICATION FOR ADHESIVE OR OTHER LIQUID

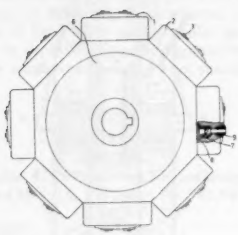
Henning Ronneberg, Blegdamsvej 28-32, Copenhagen, Denmark

Filed Apr. 5, 1971, Ser. No. 131,380

Claims priority, application Denmark, Apr. 6, 1970, 1703/70

Int. Cl. B05c *5/02*

U.S. Cl. 118—3 7 Claims



A machine for application of adhesive or other liquid, of the type having a rotating wheel which is rolled upon the material on which liquid is to be applied, the wheel having one or more application apertures on its circumference, the machine having means for carrying liquid from a reservoir to said aperture or apertures, characterized in that the means for carrying the liquid to the aperture or apertures of the wheel comprises a conduit system rotating with the wheel.

3,812,821

PRODUCTION OF COATED ROADSTONE

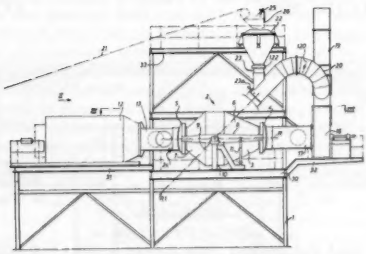
Geoffrey Laycock, Whashton, near Richmond, England, assignor to Underground Mining Machinery Limited, Darlington, Durham, England

Filed Apr. 14, 1972, Ser. No. 243,944

Claims priority, application Great Britain, Apr. 15, 1971, 9515/71

Int. Cl. B05c *3/00*

U.S. Cl. 118—418 20 Claims



An apparatus for producing coated roadstone in which a cold aggregate material having a predetermined moisture content and a bituminous binder are charged into a mixer barrel open at both ends while the latter is disposed with its axis inclined to the horizontal. The barrel is pivoted into a position in which its axis is horizontal and rotated without heating so as to produce a cold mix. Mixing continues while hot air is passed through the barrel. When mixing is complete, the barrel is returned to its inclined position and rotated in reverse direction to discharge the mix.

3,812,822

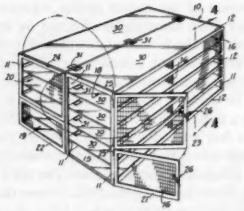
POULTRY HANDLING SYSTEM

Milton O. Blankenship, Canton, Ga.

Division of Ser. No. 107,771, Jan. 19, 1971. This application June 6, 1972, Ser. No. 260,308

Int. Cl. A01k *31/06*

U.S. Cl. 119—17 3 Claims



A receiving station having an upwardly open operable conveyor surface for conveying poultry to be processed from one location along a predetermined path to a second location is provided with an adjustable support platform means movable between operable and inoperable positions for effecting a transfer of poultry by gravity from a container means onto the conveyor surface in response to the platform being moved to the operable position. Padded guide means is provided on an opposite lateral side edge of the conveyor means from the adjustable platform means for absorbing the impact of poultry deposited thereon and for effecting a guided movement of the deposited poultry onto the conveyor means. The conveyor means is operable for effecting a transfer of the poultry deposited thereon from a first location adjacent the operable platform to a second location adjacent suspension means used for conveying poultry through a processing operation. Special container means is provided for transporting poultry from poultry growing facilities to the receiving station. The container means is detailed to be supported on the platform means and for movement to the angular oriented operable position for effecting a transfer of poultry by gravity from within the container means onto the conveyor and padded guide means.

3,812,823

DEVICE FOR SUPPLYING FLUID FEED INTO FEEDERS

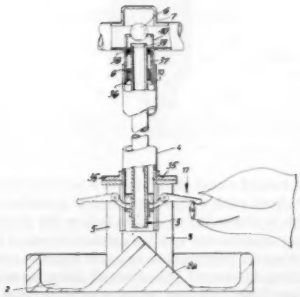
Hubert Ridder, Raesfeld; Winfried Epping, Borken-Weseke, and Paul Icking, Borken, all of Germany, assignors to GEBR Schmeing, Weseke, Germany

Filed Oct. 12, 1972, Ser. No. 296,991

Claims priority, application Germany, Oct. 13, 1971, 2150968; May 27, 1972, 2225967

Int. Cl. A01k *5/00*

U.S. Cl. 119—54 9 Claims



A device for supplying fluid feed from an overhead supply pipe into a feeder for hog-raising comprises a tapping pipe ver-

tically supported over the feeder and extending into the main supply pipe. The tapping pipe is urged into its topmost position by a return spring. The upper end portion of the tapping pipe passes through an opening in a trestle structure and the upper orifice of the tapping pipe is closed by a ball valve. The feed pressure in the main supply pipe, urges the ball valve and thereby the tapping pipe is lowered, against the action of the return spring, until the ball vale is retained in the opening of the trestle structure. Further lowering of the tapping pipe against the action of the return spring, causes a flow of feed into the feeder. This lowering is effected by levers which are located adjacent to the feeder and actuated by the animals.

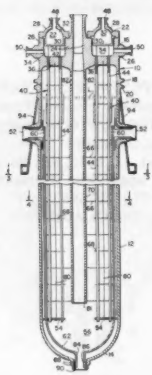
In another embodiment, a feed reservoir arranged above the main supply pipe communicates with the same through a connection tube in which a double-acting valve is positioned and connected to a float within the reservoir, rigidly, by a rod. The reservoir also has an outlet which leads to the feeder and is closed by a ball valve, this valve being connected to an arm extending over the double-acting valve. The feed under pressure flows into the reservoir until the float causes the double-acting valve to close the connection tube. After the filling up of all reservoirs on the line is terminated, the pressure in the main supply pipe increases and pushes the double-acting valve farther into the reservoir so that the arm to which the ball valve is connected is lifted and the reservoir is discharged into the feeder. Both the outlet and the connecting tube are then closed owing to the weight of the float and of the ball valve.

3,812,824

SODIUM-HEATED STEAM GENERATOR

John Polcer, Florham Park; Robert O. Barratt, Parsippany, both of N.J., and John Roberts, San Jose, Calif., assignors to Foster Wheeler Corporation, Livingston, N.J. and General Electric Company, San Jose, Calif.

Filed Mar. 4, 1971, Ser. No. 121,100
Int. Cl. F22b *1/06*
U.S. Cl. 122—32 **8 Claims**



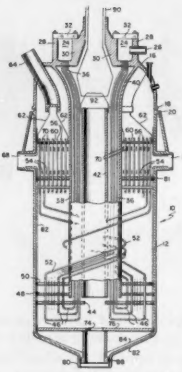
A sodium heated steam generator in which the likelihood of tube failure from such factors as thermal growth is reduced and in which in the event of a tube failure the products of a sodium water reaction are quickly exhausted out of the steam generator. Water is generated to steam in bayonet tube assemblies extending downward into a vessel down through which liquid sodium flows and into which a central relief pipe extends to provide means for the escape of the products of an accidental sodium water reaction.

3,812,825

SODIUM HEATED HELICAL COIL ARRANGEMENT

John Polcer, Florham Park; Robert O. Barratt, Parsippany, both of N.J., and John Roberts, San Jose, Calif., assignors to Foster Wheeler Corporation, Livingston, N.J. and General Electric Company, San Jose, Calif.

Filed Mar. 8, 1971, Ser. No. 121,665
Int. Cl. F22b *1/06*
U.S. Cl. 122—34 **5 Claims**



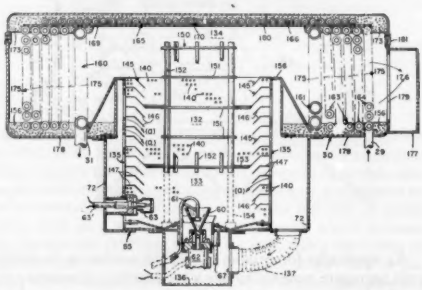
A superheater heated by liquid sodium which is efficient, occupies a minimum of space and provides means to safely exhaust the products of an accidental sodium-water reaction. Saturated steam flows through downcomers which pass between a tube bundle support pipe and a relief duct extending co-axially within the support pipe and then upwardly through helical coils which encircle the support pipe and which are heated by downward flowing liquid sodium.

3,812,826

COMBUSTOR FOR POWER VAPOR GENERATORS

William P. Lear, Verdi, Nev., assignor to Lear Motors Corporation, Reno, Nev.

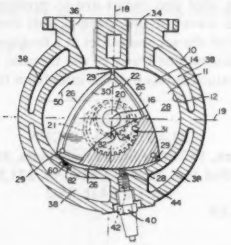
Continuation-in-part of Ser. No. 261,691, June 12, 1972. This application June 16, 1972, Ser. No. 263,407
Int. Cl. F22b *21/00*
U.S. Cl. 122—250 R **6 Claims**



The vapor generators are for powering external combustion engine systems. The combustors thereof provide heat in response to engine power demand to vaporize liquid in their boiler tubes. Their combustion emissions are with low noxious pollutant content over the power operating range of the en-

gine system. Internal arrangements are incorporaed in the combustors that maximize burning-up of fuel that is injected into the primary combustion zone. Portions of the combustors that may reach above 2,100° F are minimized to inhibit the formation of nitrous oxide. Regions that might fall below 1,500°F are controlled to avoid quenching that would result in the formation of carbon monoxide and unburned hydrocarbon particles. The flow of combusted gases is moderated by arranging for the flow of incoming air to be in the counter direction. Air and fuel particles are thoroughly intermixed towards complete combustion. A wide range of available fuels may be used, and operation over at least a 20:1 ratio of fuel input is effected. An important feature hereof is the use of a flat spiral wall of fluid filled tubing above the combustion zones. Fluid to be vaporized flows through the fluid tube wall, and shields the combustor housing from reaching excessive temperature.

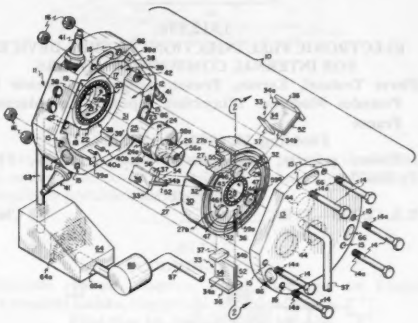
3,812,827
ENGINE
Wallace Leon Linn, 6705 Grosvenor Pl., Indianapolis, Ind.
Filed Mar. 16, 1973, Ser. No. 341,983
Int. Cl. F02b *53/00*
U.S. Cl. 123—8.01 **12 Claims**



A rotary combustion engine of the type comprising a housing providing a two-lobed epitrochoidal cavity in which rotates a generally triangularly-shaped piston, the sides of which cooperate with the peripheral wall of the cavity to define three variable-volume work chambers. A thermally conductive member is placed in the peripheral wall of the cavity and insulated from that wall, the member being positioned such that it has an inwardly-directed face engaged by the axially extending seals carried at the apices of the piston. One such conductive member may be placed in the peripheral wall at the portion thereof providing a transition between the compression phase and the expansion phase. Another such conductive member may be placed in the peripheral wall in advance of the exhaust port such that the exhaust gases must move therepast to be exhausted from the port.

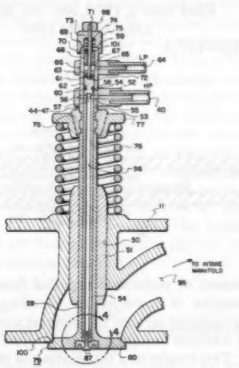
3,812,828
ROTARY ENGINE
Franklin E. Griffiths, 1494-B S.W. Temple, Salt Lake City, Utah 84115
Filed Feb. 14, 1973, Ser. No. 332,343
Claims priority, application Japan, Feb. 17, 1972, 47-16623
Int. Cl. F02b *55/14*
U.S. Cl. 123—8.45 **7 Claims**

A rotary engine incorporating a housing wherein a cylindrical center cavity is formed to contain a cylindrical piston and radial vanes extending therefrom that divide the center cavity into equidistantly spaced firing chambers. The cylindrical piston is journaled as an eccentric to an off-center axle, and is induced by sequential combustion of a fuel-air mixture in each firing chamber to move eccentrically in a circular path. The off-center shaft to which the cylindrical piston is journaled extends off-center at a normal angle from one side of an enlarged portion of a drive shaft, which drive shaft is in turn rotated by the eccentric movement of the cylindrical piston and the off-center shaft journaled thereto. The cylindrical piston of the invention is arranged to be supported within the housing center cavity on one side by spaced reaction bearings,



and by the output shaft on the other, and incorporates expansion seals arranged in the piston sides and along the radial vanes for maintaining the individual firing chamber integrity, which radial vanes are arranged in spaced radial slots formed in the cylindrical piston to act as both firing chamber end walls and as valve heads for controlling chamber fuel and air intake and exhaust.

3,812,829
FUEL INJECTION SYSTEM AND ASSOCIATED STRUCTURE
Alan G. McCormick, 645 Aloha, Salt Lake City, Utah 84103
Filed Aug. 18, 1972, Ser. No. 281,770
Int. Cl. F02b *3/00*; **F02m** *39/00*
U.S. Cl. 123—32 VN **8 Claims**



A fuel injection system and structure therefor, wherein a high-pressure pump is used to inject fuel through the air intake valve structures of the engine. The valve structures are unique in many particulars, among which is the structural provision for valve displacement to effect air intake, as well as fuel injection through the valve stem at desired times directly into the associated cylinder. While the system lends itself to multiple piston pump operation, still, single piston pump operation is

preferred for cost and maintenance considerations. A lost-motion structural provision is incorporated so as to insure the commencement of fuel injection immediately prior to valve opening as to air intake. A low pressure fuel return system is provided in the event of seal-leakage or failure in the valve stem structures. Timing as to fuel injection depends solely upon rocker-arm or other depression of the valves and, hence, is of simplified and yet highly effective form.

3,812,830

ELECTRONIC FUEL INJECTION CONTROL DEVICES FOR INTERNAL COMBUSTION MOTORS

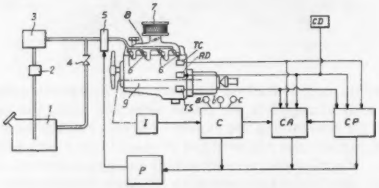
Pierre Traisnel, Evreux, France, assignor to Societe Des Procedes Modernes D'Injection Sopromi, Les Mureaux, France

Filed Aug. 29, 1972, Ser. No. 284,614

Claims priority, application France, Sept. 10, 1971, 71.32677

Int. Cl. F02b *3/00*

U.S. Cl. 123—32 EA **18 Claims**



Control circuits for a fuel injection system for engines in which the engine is provided with a pre-injection and/or supplementary injections of fuel in addition to the normal injections for cold starting conditions.

3,812,831

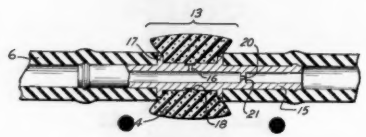
VACUUM ADVANCE CONTROL SYSTEM

Milford M. Scott, Jr., Las Vegas, Nev., and Floyd J. Wheeler, Jr., Marina Del Rey, Calif., assignors to STP Corporation, Ft. Lauderdale, Fla.

Filed Nov. 1, 1972, Ser. No. 302,936

Int. Cl. F02p *5/06*

U.S. Cl. 123—117 A **9 Claims**



The amount of pollutants expelled from an internal combustion engine is lowered by bleeding a predetermined amount of ambient air into the conduit which connects a conventional vacuum advance control system with the intake manifold. This results in a retardation of the vacuum advance that otherwise would be obtained and provides a considerable reduction in oxides of nitrogen, CO and hydrocarbons. The vacuum advance bleed control comprises a conduit inserted into the vacuum advance line of an internal combustion engine, with a characterized bleed hole in the conduit, and filter medium for preventing dirt from entering the bleed hole. Flanges on the conduit hold the filter in position and an annular recess is provided in the conduit over the bleed hole. An orifice may be provided in the conduit between the bleed hole and the carburetor.

3,812,832

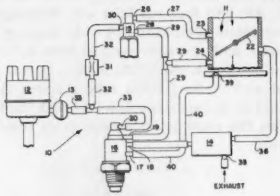
DUAL FUNCTION THERMAL VALVE

Arthur A. Scott, Mount Prospect, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jan. 8, 1973, Ser. No. 321,502

Int. Cl. F02m *25/06;* **F02p** *5/04;* **F02m** *7/12*

U.S. Cl. 123—119 A **7 Claims**



A dual function thermal valve system independently controls first and second valves or motors which in turn may control vacuum operated accessories such as a hydrocarbon emissions control, a distributor timing device or heater controls and the like. A diaphragm actuated by a thermal unit in a dual-function valve body separates a first normally open inlet and outlet from a second normally closed inlet and outlet. Valve seats for each inlet and outlet are so positioned that a first predetermined travel of the thermal unit communicates the second inlet with the second outlet at a first temperature while a second predetermined travel of the thermal unit at a second higher temperature closes the first inlet from the first outlet.

3,812,833

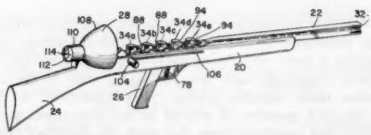
ELASTIC BAND GUN

John A. Skillern, 132 State St., Framingham, Mass. 01701

Filed Jan. 31, 1972, Ser. No. 221,960

Int. Cl. F41b *7/02*

U.S. Cl. 124—19 **15 Claims**



An elastic band gun having a plurality of pivotally mounted releasers which are serially located from front to back on the stock. Each releaser is adapted to support the rear end of a stretched elastic band and upon actuation to release the band at a level above that of the tops of any forwardly located releasers. A spring action powered, manually cocked, escapement-type sequencing system responsive to actuation of the trigger works either semi-automatically or fully-automatically to free the releasers to discharge the bands. In another form, the bands are retained in notches, and scrapers controlled by the sequencing system free the bands from the notches to discharge them. A combination safety shield and sighting device is designed to capture rearwardly discharged elastic bands.

3,812,834

SLINGSHOT ASSEMBLY

Charles A. Saunders, Columbus, Nebr., assignor to Saunders Archery Co., Columbus, Nebr.

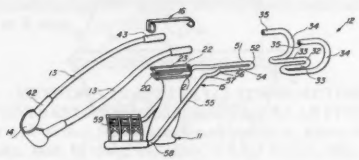
Filed Apr. 13, 1973, Ser. No. 350,906

Int. Cl. F41b *7/00*

U.S. Cl. 124—20 R **7 Claims**

A slingshot assembly separable into component parts for shipping and storage, and forming an accurate, arm-braced

device for use. Components of the device are a handle having a grooved crown, a hook assembly and an arm brace fitting frictionally within the grooves, and a retaining clip for preventing forward shifting of the components within the grooves. The arm brace has a U-shaped portion that frictionally engages grooves in the crown and extends around the forward end of the crown. While in the grooves the clip is positioned over the arm brace at the forward end of the crown. The rear portion of the clip is positioned over the rear portion of the crown.

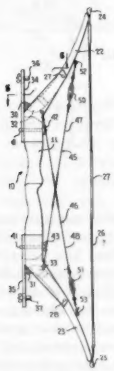


3,812,835

FORCE MULTIPLYING TYPE ARCHERY BOW

George C. Smith, 1738 Edeline Ave., McKinleyville, Calif. 95521

Filed Nov. 29, 1972, Ser. No. 310,448
Int. Cl. F41b *5/00*
U.S. Cl. 124—24 R 12 Claims



An archery bow formed by a main member adapted to be grasped by an archer with a limb pivotally attached to each opposite end thereof, with construction for reducing the pull or draw poundage of the bow between undrawn and fully drawn positions of a bow string. The limbs are pivoted relative to the main member and lesser force is required to maintain the reduced poundage than that required at the fully drawn position absent the reducing means. The bow has an element for limiting the amount of rotation of the limbs relative to the main member that is gripped by a user. Each limb has an antifriction member that bears against a resilient member and is biased by the resilient member when pivoted relative to the main member.

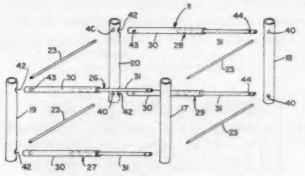
3,812,836

PORTABLE KNOCKDOWN OVEN

William B. Jackson, 1256 Laurel Hill Dr., San Mateo, Calif. 94402

Filed Sept. 27, 1972, Ser. No. 292,541
Int. Cl. F24c *1/16*
U.S. Cl. 126—9 R 5 Claims

A portable oven is disclosed having a knockdown enclosure with removable side and end members. A heat-proof cover may be provided for enclosing the top, sides and ends thereof. The oven may further include a grill rack for receiving food desired to be cooked in the oven and a fire pan tray on which the rack is set for receiving charcoal or the like. Optionally, the oven may be covered with aluminum foil, thus providing a completely portable knockdown oven.

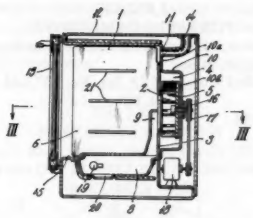


3,812,837

COOKING OVEN

Tadayoshi Takase, Nagoya, Japan, assignor to Rinnai Kabushiki Kaisha, Nagoya-shi, Aichi-ken, Japan

Filed May 14, 1973, Ser. No. 360,166
Claims priority, application Japan, Jan. 17, 1973, 48-7558
Int. Cl. F24c *15/16, 15/32*
U.S. Cl. 126—21 A 9 Claims



A cooking oven comprising a heating chamber divided by a partition wall to form a rear blower chamber containing a blower. The partition wall is provided with an opening leading to the blower chamber so that heated air from a combustion chamber is directly drawn from the combustion chamber to the blower chamber. A pair of left and right side plates project forwardly from opposite side edges of the partition plate to form air passages communicating between the interior of the blower chamber and the front portion of the interior of the heating chamber. A portion of a rear wall of the heating chamber is bent into substantially the same plane as the partition plate and an exhaust opening leading to ambient atmosphere is formed in the bent portion. The partition plate and the side plates are formed integrally and are detachably mounted within the heating chamber.

3,812,838

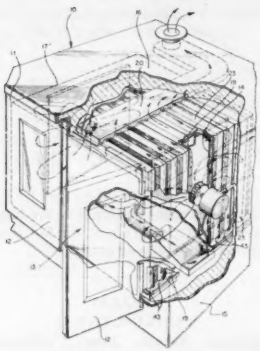
OVEN COMBUSTION PRODUCTS DISTRIBUTION SYSTEM

Paul A. Mutchler, University, Mo., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

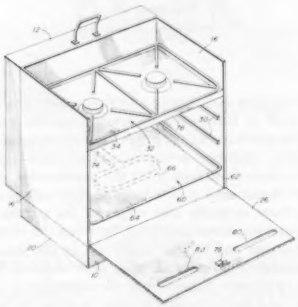
Filed July 5, 1973, Ser. No. 376,661
Int. Cl. F24c *15/32;* A21b *1/10*
U.S. Cl. 126—21 A 6 Claims

A liquid fuel-fired convection oven wherein the gases of combustion from a burner are blended with cooling air flowing through an annular space surrounding the combustion chamber and the blended hot gases are divided into two streams each of which is caused to flow through a plurality of

channels which extend vertically along the side wall and across the top wall of the oven, emptying into an exhaust manifold on the top of the oven. The contiguous, hollow channels allow the hot gases to flow in substantially uniform streams in contact with the side and top walls to provide a uniformly efficient transfer of heat to the oven.



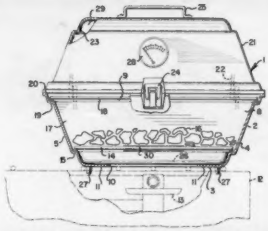
3,812,839
PORTABLE CAMP STOVE
Peter L. Helgeson, Macungie, Pa., assignor to Raytheon Company, Lexington, Mass.
Filed Mar. 1, 1973, Ser. No. 337,248
Int. Cl. F24c *3/14*
U.S. Cl. 126—38 **11 Claims**



A portable camp stove which comprises an arrangement of bottom, back, front and end sections hingedly connected together so as to be assembled in one position of use and to be folded into a compacted relationship for portability, together with gas burners for top cooking and additional gas heating elements for selective broiling and baking operation.

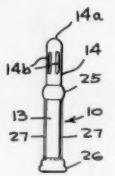
3,812,840
PORTABLE GRILL
Kenneth R. Whaler, 502 Murray Rd., Lees Summit, Mo. 64063
Filed Dec. 12, 1972, Ser. No. 314,343
Int. Cl. F24b *7/04;* **A47j** *37/00*
U.S. Cl. 126—275 R **6 Claims**

A closable cooking device in the nature of a charcoal fired smoke oven has a bottom portion containing a heat grid supporting non-combustible heat absorbing and radiating material and an opening through the lower wall of the bottom portion, whereby the device may be placed upon a camping stove or the like. This exposes the radiating material to direct flame,



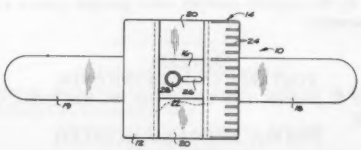
whereupon it tends to produce characteristic barbeque oven cooking without utilizing charcoal or other fuel supply normally used for this purpose.

3,812,841
URETHRA MAGNETIC VALVE STRUCTURE
Leland H. Isaacson, 8117 New Riggs Rd., Hyattsville, Md. 20783
Filed Aug. 21, 1972, Ser. No. 282,041
Int. Cl. A61b *19/00*
U.S. Cl. 128—1 R **12 Claims**



A urethra magnetic valve structure comprising an implantable tubular valve housing to be located in the urethra at its juncture with the bladder. The valve housing has a pair of spaced, inflatable retention collars to be inflated for supporting the valve unit in proper position with a slotted head portion of the housing in the bladder. A valve member is resiliently biased to closed position against an apertured valve seat, and a magnetic core is connected to the valve member, to be moved by a force field generated by an electromagnet activating device external of the patient's body to open the valve and void the bladder.

3,812,842
METHOD FOR LOCATING BLOOD VESSELS FOR CATHETERIZATION
Paul L. Rodriguez, 2116 N. Center, Garden City, Kans. 67846
Filed Jan. 18, 1973, Ser. No. 324,863
Int. Cl. A61b *5/00;* **G03b** *41/16*
U.S. Cl. 128—2 A **4 Claims**



An indexing scale positioned on the exterior of the body of a human being includes markers that are visible in X-ray photo-

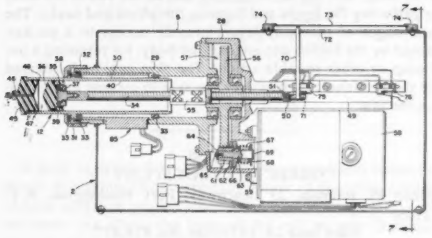
graphs to facilitate locating a particular blood vessel relative to the scale in an X-ray photograph. By reference to the X-ray, a movable indicator carried with the scale is positionable to indicate the location of the vessel relative to the scale on the exterior of the body. Under a fluoroscope, a catheter can then be guided into alignment with the indicator and thus into the vessel to catheterize same quickly and easily with minimum exposure to X-rays.

3,812,843

METHOD AND APPARATUS FOR INJECTING CONTRAST MEDIA INTO THE VASCULAR SYSTEM

John A. Wootten, South Euclid, and George S. Rives, Sheffield Lake, both of Ohio, assignors to Lear Siegler, Inc., Maple Heights, Ohio

Filed Mar. 12, 1973, Ser. No. 340,226
Int. Cl. A61b *5/02; A61m 5/20*
U.S. Cl. 128—2 R **26 Claims**



A method and apparatus by which fluid is delivered either sequentially at two different rates or at one rate as desired. Suitable controls are provided for independently selecting such different flow rates and the duration of time of each flow rate, which may either be manually or automatically delivered. During the injection cycle, a slow prolonged infusion, typically 2 ml per second for 20 seconds is made into the femoral artery, immediately followed by a rapidly delivered bolus, typically 20 ml per second for 2 seconds. On completion of the injection, the low flow injection has reached the digital vessels and the high flow injection is localized in the distal aorta with all vessels between being opacified, whereby a single X-ray exposure may be taken from the aorta to the foot with the film positioned under the area of interest. The injection apparatus is relatively compact and permits both extension and retraction as well as rotation of the syringe assembly relative to the control cabinet. Suitable means are also provided for accommodating any misalignment between the syringe piston and ball screw shaft and also for absorbing the rotational forces acting on the ball screw shaft during axial movement thereof. A ground fault interrupter guards against current leakage to ground by removing the power from the motor and controls when the current leakage to ground exceeds a predetermined low level, for example, 0.5 milliamps.

3,812,844

APPARATUS FOR MEASURING BLOOD PRESSURE WITH CORRESPONDING CUFF SECTIONS AND INDICATION RANGES

Kurt Rudolf Franz Sokol, Schwachhauser Heerstrabe 295, 28 Bremen, Germany

Filed May 26, 1971, Ser. No. 147,034
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 G **14 Claims**

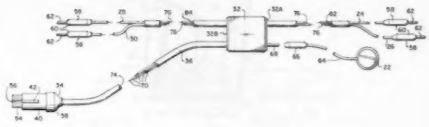
Apparatus for measuring blood pressure, with automatic compensation for variation in limb diameter, includes a bandage and a measuring apparatus indicating unit connected thereto. The bandage is subdivided along its length into a plurality of sections, each of which is associated with its own indicating zone in the measuring apparatus. The subdivisions can be visual. Alternatively, they can be by means of electrical contacts or a resistor extending longitudinally of the bandage; in which case the use of the apparatus can be simplified by the incorporation of rotating sealers or pointers actuated by circuitry responsive to the effective length of bandage in use.

3,812,845

PATIENT CORD ASSEMBLY

Leslie W. Partridge, Janesville, Wis., assignor to The Burdick Corporation, Milton, Wis.

Filed May 19, 1972, Ser. No. 255,006
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 R **18 Claims**



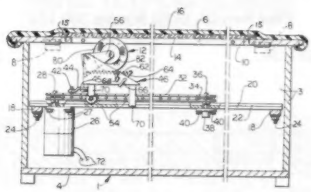
A patient cord assembly for connecting an electrocardiograph to arm, leg and chest electrodes includes a junction block from which electrode leads extend in such a way that the leads are easily and naturally arranged relative to the patient in the optimum configuration to reduce electromagnetically coupled interference.

3,812,846

MASSAGING MACHINE

Horace I. Trout, Rt. 4, Box 44, Bowie, Tex. 76230

Filed Oct. 24, 1972, Ser. No. 300,288
Int. Cl. A61h *15/00*
U.S. Cl. 128—57 **2 Claims**

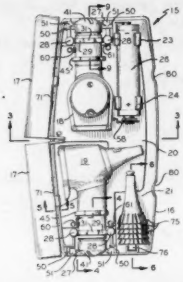


A machine for moving a massaging roller lineally along a path beneath a sheet of material which covers an elongated slot in a table or cabinet top, which table or cabinet is usually covered with upholstery material, and overlies a sheet of material which may be urged upwardly against the upholstering material and the spinal area of the person lying on the table to be massaged, when the machine is in operation. The roller is moved substantially the length of the spine, in a timed sequence and under controlled resilient pressure, so as to relax the muscles and relieve tension of the nerves of the spinal area. Provision is made for moving the roller, which is preferably faced with a cushioning material, by means of a motor which drives an endless chain, with the travel of the roller preferably being the length of the adult spine. The roller is mounted to move back and forth in timed relation, with the upward pressure on the roller being regulated to give the most desirable effect on the back muscles and on the spine.

3,812,847
COMBINATION BATTERY HANDLE-CASE FOR A PAIR OF ATTACHED, OUTFOLDING ILLUMINATED MEDICAL INSTRUMENTS

William C. Moore, Skaneateles, and John D. Connors, Auburn, both of N.Y., assignors to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Filed May 8, 1972, Ser. No. 251,303
Int. Cl. A61b 1/22
U.S. Cl. 128—9 11 Claims

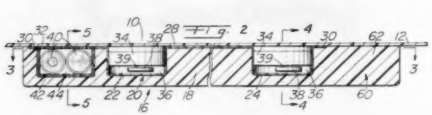


A pocket-size combination case and battery handle for attached otoscope and ophthalmoscope heads has an external shut-off switch and contains a swing-out holder for otoscope tips and a battery and wiring to both instruments. Each instrument may be individually swung out and rotatably adjusted at its end of the case to a plurality of operative positions. The electrical connection to each instrument is automatically made when it is swung out and is broken when it is returned to the case. Access to each instrument is by a separate hinged cover over half the case for each, the covers being alternatively spring biased to open or closed position.

3,812,848
APPARATUS FOR CLEANSING AND MASSAGING

Gerhard Kollitz, 1144 N. Euclid, Apt. 11, Anaheim, Calif. 92801

Filed Nov. 24, 1972, Ser. No. 309,154
Int. Cl. A61h 1/00
U.S. Cl. 128—36 3 Claims



A device for cleansing and massaging comprising an elongated support strap having openings disposed in each end thereof to provide means for grasping the device with both hands, a sponge-like, moisture-retaining member being secured to at least one side of the strap, said device having disposed and sealed therein a vibrating massage means with energizing means removably housed within the sponge structure to provide the operating power to the device.

3,812,849
SKIN CONDITIONING ARTICLE

Grace G. Giunta, 576 Riviera Dr., Hillsborough, Fla. 33606

Filed Aug. 2, 1972, Ser. No. 277,365
Int. Cl. A61h 7/00
U.S. Cl. 128—67 22 Claims

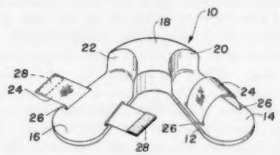
A skin conditioning article has a springy and pliable body of layers of nylon net fabric with a mesh of about one-eighth inch, more or less. In the illustrated embodiment, the body is elongated and has four layers of fabric gathered at either end to form necks and pleats. The fabric is first doubled upon itself to form a folded end edge. Both sides of the fabric are then doubled over to form a pair of folded side edges and open edges proximate each other at the center of one face of the body. The layers are secured to each other in any suitable

manner, as by stitching, proximate each of the opposite ends of the body, and this stitching may also secure ties to the body for gathering the layers and forming the pleats and necks. The open edges of the body layers provide access to a pocket, formed by the folded end edge of the body, for retaining a bar of soap or other suitable article. The skin may be lubricated and the net fabric rubbed over the skin to cleanse and condition the skin.

3,812,850
CORRECTIVE FOOT SPLINT

Reuben H. Reiman, 23 Beachway, Port Washington, N.Y. 11050

Filed June 28, 1973, Ser. No. 374,477
Int. Cl. A61f 3/00
U.S. Cl. 128—80 A 6 Claims

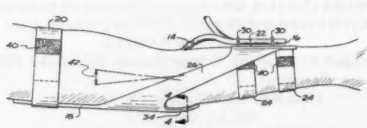


The present invention is directed to a foot splint for the correction of toed-in or pigeon-toeing, sometimes known as clubfoot, by the use of a single fixed angle support for both feet simultaneously without the requirement for dynamic periodic readjustment.

3,812,851
I. V. ARM REST AND SUPPORT

Paul L. Rodriguez, 2116 N. Center, Garden City, Kans. 67846

Filed Nov. 21, 1972, Ser. No. 308,315
Int. Cl. A61m 5/00
U.S. Cl. 128—133 10 Claims



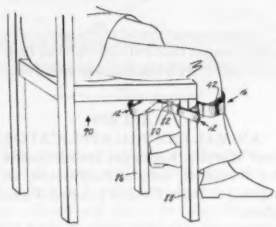
A medical arm support that substantially immobilizes the arm to facilitate intravenous injection of fluid into the arm adjacent the elbow, but which allows a limited amount of natural

flexure of the arm at the elbow for patient comfort. A spiral, slightly flexible section joins a panel overlying the forearm with a support panel underlying the upper arm to produce the desired immobility while allowing limited flexure. Upstanding posts secure and hold flexible tubing that supplies the fluid being injected to the forearm panel to prevent relative needle movement during flexing of the arm.

3,812,852
BODY RESTRAINT

Robert L. Konvalin, Shandelee Rd., R.D. 2, Livingston Manor, N.Y. 12758

Filed Jan. 11, 1973, Ser. No. 322,817
Int. Cl. A61f *5/37*
U.S. Cl. 128—134 **10 Claims**



A body restraint for persons having diminished control of motor functions while sitting in chairs. Adjustable circumference cuffs are placed around the person's legs just under the knee and above the belly of the calf muscle. Retaining rings secured to the cuffs are positioned to the rear of the calves.

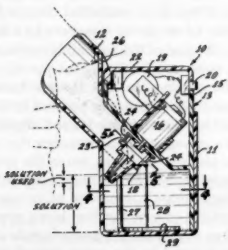
First and second straps, both having closed loops at one end, the second having a buckle at the other end, are secured to the front legs of the chair by circumnavigating the chair legs with the free ends and passing them through the closed loops, one strap for each leg. The tongue of the first strap is then passed through the retaining rings of each of the cuffs and secured to the buckle of the second strap.

Sufficient length is left in the strap to allow the person in the chair to have relative freedom of movement of the legs, and yet if he should slide down with his legs moving forward, the straps will hold his lower legs and accordingly will prevent the rest of his body from continuing the downward and forward motion.

3,812,853
APPARATUS FOR APPLYING MEDICATION OR THE LIKE TO HUMAN NASAL PASSAGES

Philip W. Crain, 507 Esplanade Ave., Redondo Beach, Calif. 90277

Filed Nov. 17, 1971, Ser. No. 199,658
Int. Cl. A61m *11/00*
U.S. Cl. 128—173 **4 Claims**

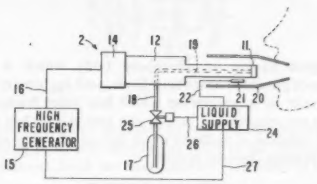


Apparatus for applying a solution in particle form to a body cavity such as the nasal passage for medicinal, therapeutic and hygiene purposes. An electrically powered battery operated pump is provided in a solution holding housing which is provided with a tubular opening into which the nose of the user for example, is inserted. The actuation of the pump disperses particles of the solution in the housing toward the nose of the user. A small opening to the atmosphere is also provided in the tubular opening to enable the user to deeply inhale, thereby drawing the solution particles deep into the nasal passages.

3,812,854
ULTRASONIC NEBULIZER

Alan S. Michaels, 97 Mt. Vernon, Atherton; Richard G. Buckles, 491 Middle Ct., Menlo Park, both of Calif. 94025, and Michael P. Keller, 2272 Latham St., Mountain View, Calif. 94040

Filed Oct. 20, 1972, Ser. No. 299,194
Int. Cl. A61m *15/00*
U.S. Cl. 128—194 **8 Claims**

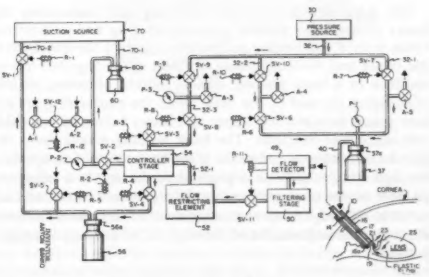


A device for the ultrasonic nebulization of liquids. Nebulization takes place in a porous solid body the porosity of which determines the size of the liquid particles generated. The device is especially suitable for nebulizing liquid medicaments for inhalation therapy.

3,812,855
SYSTEM FOR CONTROLLING FLUID AND SUCTION PRESSURE

Anton Banko, Bronx, N.Y., assignor to Surgical Design Corp., Long Island City, N.Y.

Filed Dec. 15, 1971, Ser. No. 208,282
Int. Cl. A61m *1/00*
U.S. Cl. 128—276 **19 Claims**



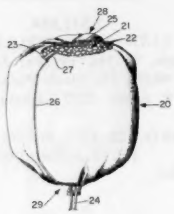
A system for controlling pressurized fluid and suction pressure to be supplied to an instrument, such as an instrument for performing surgical operations. The system permits a variety of flow configurations to the instrument including either pressurized fluid or suction pressure alone or combinations of the two at adjustable pressures. The flow configurations are readily selectable by an operator under the control of an electrical operating system.

3,812,856

HYDRO-DISSOCIATIVE AGGLOMERATE TAMPON

Robert Campbell Duncan, and Darrel Dayfield Kokx, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 17, 1972, Ser. No. 254,055
Int. Cl. A61f 13/20
U.S. Cl. 128—285 13 Claims



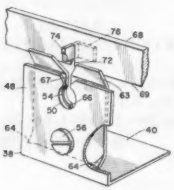
A tampon having an absorbent body which is an agglomerate of pieces of absorbent foam, said agglomerate being held together by an overwrap which has water frangible closures that are maintained before use and in vivo but open up when the tampon is agitated in an excess of water such as a standard sewage disposal system.

3,812,857

DIFFERENTIAL BEAK TRIMMER

James Lyon, 2922 Qualtruagh St., San Diego, Calif. 92106

Filed Nov. 30, 1972, Ser. No. 310,935
Int. Cl. A61b 17/36; A61n 3/00
U.S. Cl. 128—303.1 8 Claims



The apparatus is used for trimming and cauterizing the beaks of fowl and utilizes a heated cutting and cauterizing blade with a cauterizing projection attached thereto so that the blade and the cauterizing element move together across the face of a beak holding means, thereby shearing off and cauterizing the end of the beak while the cauterizing projection passes between the upper and lower halves or mandible and maxilla of the beak. The beak holding means limits the portion of beak exposed to the blade by the size of an aperture through which the beak is protruded, the aperture being adjustable in size to accommodate different sized beaks, and adjustable sideways to permit alignment of the plane between the mandible and maxilla of the beak with the cauterizing projection.

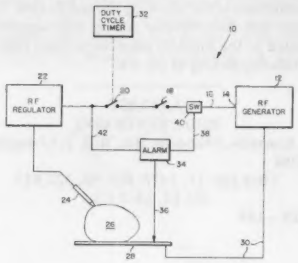
3,812,858

DENTAL ELECTROSURGICAL UNIT

Maurice Jules Oringer, New York, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed Oct. 24, 1972, Ser. No. 300,181
Int. Cl. A61b 17/38; A61n 3/04
U.S. Cl. 128—303.14 7 Claims

Disclosed is a dental electrosurgical apparatus having means to automatically regulate the proper amount of power needed to cut soft tissues of the body, a timing device to regulate and repeatedly interrupt the period of active current flow



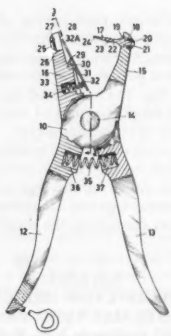
and a regulator means that cuts off current flow when the patient is not in contact with the inactive electrode.

3,812,859

ANIMAL EAR TAG APPLICATORS

Brian Egmont Murphy, Kaponga; John Reginald Burford, and Alexander Wassilieff, both of Palmerston, all of New Zealand, assignors to Delta Plastics Limited, Palmerston, North, New Zealand

Filed Nov. 20, 1972, Ser. No. 307,964
Claims priority, application New Zealand, May 25, 1972, 167280
Int. Cl. A61b 17/00
U.S. Cl. 128—330 3 Claims



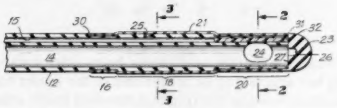
An animal ear tag application having two lever members pivoted together, one side of the levers at their pivot formed as handles and the other side formed as jaws, a pin fixed to the jaw of a first one of the lever members directed towards the jaw of a second one of the lever members and having an ear-piercing free end, the jaw of the second lever member formed with an open slot from its side facing the jaw of the first lever member and a hole passing through the jaw behind the open slot, an open-slotted plate centrally pivoted to the jaw of the second lever member and spring-loaded thereto, the slots being in line, and a spring arranged between the levers at their handle side of the pivot to normally move the jaws away from each other, the construction and arrangement being such that with a headed tubular male component of an ear tag mounted on the fixed pin of the jaw of the first lever member beyond the ear-piercing free end of the pin and a female component of the ear tag being located in the open slot of the jaw of the second lever member behind the plate of such jaw retained by the spring-loaded plate; on a closing of the jaws towards an

animal's ear located between the jaws, the free end of the pin will pierce the animal's ear, then carrying the tubular male component through the female component and be secured thereby; upon release of handle pressure, the jaws will be opened by spring pressure and the pin withdrawn from the tag and the animal's ear.

3,812,860
RETENTION CATHETER

John W. Gilbert, Greenwich, and Ahmed Panagrossi, North Haven, both of Conn., assignors to International Paper Company, New York, N.Y.

Filed Apr. 5, 1973, Ser. No. 347,996
Int. Cl. A61m *25/02*
U.S. Cl. 128—349 B **18 Claims**

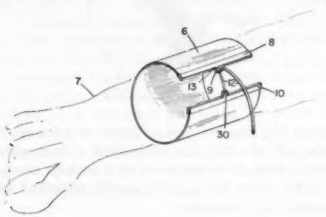


Disclosed is a retention catheter of the Foley type and a method of manufacturing such a catheter. The catheter is comprised of an extruded tube with a funnel at one end and, at the other end, a closed end sleeve peripherally bonded to the tube and having a substantially solid tip. The method of manufacture includes the step of radially compressing the tube and sleeve while bonding.

3,812,861
DISPOSABLE ELECTRODE

Ronald L. Peters, 927 W. MacArthur Blvd., Oakland, Calif. 94608

Filed Nov. 15, 1972, Ser. No. 306,614
Int. Cl. A61n *3/06*
U.S. Cl. 128—418 **3 Claims**



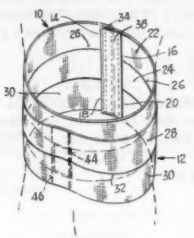
A disposable electrical plate for creating electrical contact with a human body comprises a flexible sheet of paper board, cardboard, or the like coated on both sides with a conductive foil film. One edge of the plate is formed into tabs which alternately wrap over and under a metal bar in a woven fashion to electrically connect the two foil film surfaces. To the opposing edge of the plate a clip with a notch, hook, or the like is secured. An electrical conductor secured to the metal bar completes a circuit to the plate. The plate may be wrapped around a limb of a subject to make electrical contact and then secured by positioning the conductor in the notch or hook, preventing the plate from unwrapping and breaking contact.

3,812,862
WAIST-SUPPORTING GARMENT

Bertram L. Bernstein, 85 Tahmore Ct., Fairfield, Conn. 06430

Filed Oct. 29, 1973, Ser. No. 410,904
Int. Cl. A41c *1/00;* **A61f** *5/02*
U.S. Cl. 128—578 **13 Claims**

An adjustable-width posture belt consisting of two resilient, thin, flat ribbon-like belt members intended to encircle the waist of the wearer, the members having corresponding juxtaposed ends which are secured together in partially overlapping relation, and being positioned to be coextensive with each other. The secured ends of the belt members are provided with cooperable, separable fastener means such as rows of hooks and eyes whereby they can be joined so as to hold the members around the waist of the wearer in the manner of a corset or girdle. At least portions of the belt members are arranged in overlapping relation, and cooperable Velcro fastener elements are disposed substantially at their midpoints

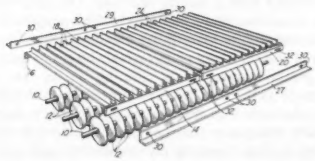


for securing the same together in any of a number of different overlapping positions, thereby to provide for different widths of the garment. With the hook and eye fasteners at the rear of the user, opposite or front portions of the belt members can be adjustably related by making them overlap either more or less, thereby to provide a reinforced support of the abdomen at the desired places while at the same time ensuring comfort for the wearer. Or, the hook and eye fasteners can be located at the wearer's abdomen, and the opposite belt portions adjusted at the rear to give firm support where needed.

3,812,863
CROP ORIENTING MECHANISM

Frederick P. West, Rt. No. 1, Terrell, Ga. 31742

Filed Apr. 9, 1973, Ser. No. 348,927
Int. Cl. A01d
U.S. Cl. 130—30 C **11 Claims**

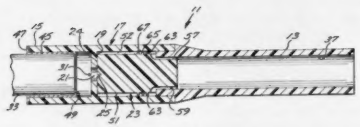


A crop orienting device is disclosed for orienting a crop being fed through a harvesting stemmer having a plurality of parallel rows of cutting disks adapted to sever stems from the crop upon rotation. The device comprises first support means supporting a first set of laterally spaced elongated crop orienting members with the spacings between adjacent crop orienting members being substantially equal. Second support means support a second set of laterally spaced elongated crop orienting members in juxtaposition with the first set of crop orienting members and with the spacing between adjacent crop orienting members of the second set being substantially equal to the equal spacings between adjacent crop orienting members of the first set. Means are also provided for securing the first and second support means rigidly together in a plurality of relative positions to render the spacing between the juxtaposed first and second sets of crop orienting members adjustable.

3,812,864
TOBACCO REPLACEMENT MATERIAL
William Francis Cartwright, Charlotte, N.C., assignor to Celanese Corporation, New York, N.Y.
Filed Feb. 9, 1972, Ser. No. 224,997
Int. Cl. A24b *15/00*
U.S. Cl. 131—2 5 Claims

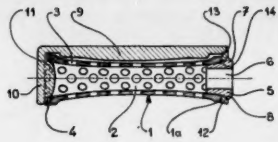
A smoking material is disclosed which consists essentially of a vinyl methyl ether: maleic anhydride copolymer or salts thereof, an inorganic particulate filler and optionally a second combustible material. The second combustible filler may be of tobacco dust, sodium gluconate, pectins, natural gums, or cellulose or its derivatives. The inorganic particulate material serves in the capacity of a combustion modifier and reduces the total effective combustible material in a particular charge.

3,812,865
SMOKING HABIT CONTROL KIT
Daniel J. Anderson, 4909 Ironwood, Seal Beach, Calif. 90740
Filed Nov. 17, 1972, Ser. No. 307,429
Int. Cl. A24f *13/04*
U.S. Cl. 131—171 A 2 Claims



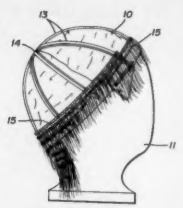
A smoking habit control kit including a set of holders including respective housings formed on their one ends with tubular mouthpieces and on their respective opposite ends with smoking piece receiving barrels, such mouthpieces and barrels being separated by respective trapping chambers. A transverse blocking wall separates the trapping chamber and barrel and is formed with a central aperture. The respective barrels include respective bleed passages in their peripheral walls, the cross sectional flow area of the bleed passages for sequential holders of the set being progressively larger to admit progressively greater quantities of diluting air to the barrel and mouthpiece as the user selectively progresses through the holders of the set. The holders each include a core received within the respective trapping chambers and formed on one end with a face abutting the transverse wall and having a diametrical linear scar formed thereacross to define a trapping passage leading radially outwardly from the aperture to the opposite sides of such core to enable smoke traveling through the aperture to flow radially outwardly through the opposite trapping passages to opposite sides of the core for axial flow rearwardly along an annular passage formed between such core and the wall of the trapping chamber to finally enter the mouthpiece and exit into the smoker's mouth. Consequently, the smoker desiring to control or break his smoking habit may commence utilizing the holder having the smallest bleed passage thus only slightly diluting the smoke drawn from the smoke piece and trapping tars and nicotene in the barrel and trapping chamber as the smoke and air mixture flows therethrough. The smoker may progress from holder to holder as he adjusts to the bleed air admitted for each respective holder in the kit to thus progressively mix greater and greater amounts of air with the smoke from the smoke piece thus reducing the hazard resulting from smoking and decreasing the smoker's reliance on smoking.

3,812,866
HAIR CURLER
Bruno Pierre Morane, Paris, France, assignor to L'Oreal, Paris, France
Filed June 12, 1972, Ser. No. 261,995
Claims priority, application France, June 10, 1971, 71.21096
Int. Cl. A45d *2/00*
U.S. Cl. 132—40 3 Claims



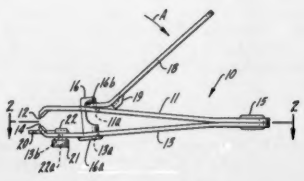
The present invention concerns a hair curler comprising a retaining bar articulated on to one end of the curler body, the articulation consisting of a ring that revolves freely around the end of the curler body and hinge connecting said ring with the retaining bar, the axis of the hinge being perpendicular to the axis of the curler.

3,812,867
CAPLESS WIG
Robert M. Wanderman, and Alice R. Wanderman, both of 126 Monroe St., both of Lawrence, N.Y. 11559
Filed Oct. 29, 1971, Ser. No. 193,793
Int. Cl. A41g *3/00*
U.S. Cl. 132—53 4 Claims



A capless wig consisting of an elastic wig frame and wefted hair strips, all of which are assembled onto a water soluble liner that is shaped in the form of a human head, with the water soluble liner being subsequently dissolved by washing after completion of the wig.

3,812,868
GUARDED FINGER NAIL CLIPPERS
Francis J. Keating, 44 E. North Ave., Lake Forest, Ill. 62702
Filed May 7, 1973, Ser. No. 358,002
Int. Cl. A45d *29/18*
U.S. Cl. 132—75.4 5 Claims



A finger nail clipper in which front or side guards, or both, are attached to protect the user from cutting the soft skin of

his fingers or toes; the guards include an adjustably mounted curved front guard, attached to the lower clipper jaw, which butts against the skin under the finger nail or toe nail to assure uniformly trimmed nails, and a side guard which is affixed to at least one side of the cutting element of one jaw member and projects alongside the cutting element of the other jaw member.

3,812,869

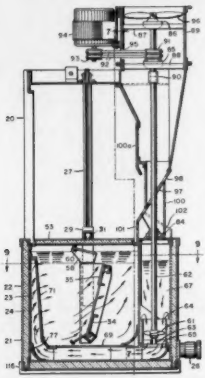
HOT-WATER MASK-WASHING MACHINE

Harry Szczepanski, 755 Oakleigh N.W., Grand Rapids, Mich. 49504

Filed Apr. 13, 1972, Ser. No. 243,601

Int. Cl. B08b *3/04*

U.S. Cl. 134—111 **7 Claims**



Masks to be cleaned are immersed in a tank in which liquid circulation is maintained at and past the masks, and over a filtering weir. This circulation is induced by a high-volume, low-pressure, and low-velocity system that creates a gravity pressure head to maintain the circulation with a minimum of energy loss. In the preferred form of the machine, the pressure system centers in a shrouded axial-flow propeller driving downward the liquid in a low-pressure portion of the tank to establish the pressure head differential. Provision is made for controlling the deposit of condensate accumulating on the cover of the heated tank.

3,812,870

APPARATUS FOR PROCESSING PHOTOGRAPHIC MATERIAL OR THE LIKE

Erwin Geyken; Peter Dawidowitsch, and Franz Ertl, all of Munich, Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

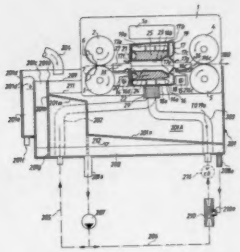
Filed Mar. 16, 1973, Ser. No. 342,321

Claims priority, application Germany, Mar. 22, 1972, 2213742

Int. Cl. G03d *3/06*

U.S. Cl. 134/122 **15 Claims**

Apparatus for wet treatment of photographic films has two pairs of rollers which transport films in a channel between upper and lower liquid discharging chambers. The lower roller of each pair dips into a supply of processing liquid in the first compartment of a vessel. When the first compartment is filled, the liquid overflows into a second compartment of the vessel whose capacity at least equals that of the chamber or chambers located above the maximum level of liquid in the first compartment. The chambers receive liquid from the first and second compartments by way of one or more pumps. The second compartment serves to store liquid which, on stoppage



of the pump or pumps, leaves by gravity flow the chamber or chambers which are located above the maximum liquid level in the first compartment.

3,812,871

HYDRAULIC INSTALLATION

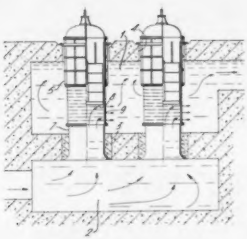
Eric Miller, Marlow, England, assignor to Glenfield & Kennedy Limited, Kilmarnock, Scotland

Filed Mar. 2, 1973, Ser. No. 337,639

Claims priority, application Austria, July 20, 1972, 44784/72

Int. Cl. F16k *3/24, 51/00*

U.S. Cl. 137—1 **4 Claims**



An hydraulic installation incorporating two underground conduits one end of which commences at a point above and overlapping an end of the other conduit and at least one vertical discharge valve interconnecting the conduits which is actuated above ground.

3,812,872

SYSTEM TO PREVENT FREEZING OF HEATING UNITS SUCH AS BOILERS

Leo Block, Woodland Hills; Larry J. Ashton, Thousand Oaks, and Kenneth F. Vodraska, Newbury Park, all of Calif., assignors to Raypak, Inc., Westlake Village, Calif.

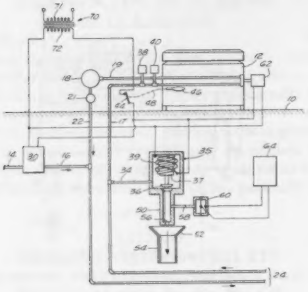
Filed June 22, 1972, Ser. No. 265,125

Int. Cl. E03b *7/10*

U.S. Cl. 137—62 **1 Claim**

A control system to prevent freezing of heating units, such as boilers, particularly those which may be outdoors, such as on a rooftop. A drain valve is provided to automatically drain the water from the unit in the event of power failure which would prevent heating of the water, or in the event of the occurrence of a low temperature of the water approaching freez-

ing, or both. The system may also include a valve which closes in response to one or both of these conditions to prevent admission of water to the unit. The drain valve embodies a time delay feature so as to not respond to power failures of minimum predetermined duration.



3,812,873

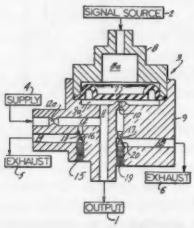
FLUID SIGNAL LIMITING DEVICE

Richard N. Laakaniemi, and Robert R. Stahl, both of Milwaukee, Wis., assignors to Johnson Service Company, Milwaukee, Wis.

Division of Ser. No. 199,893, Nov. 18, 1971. This application May 29, 1973, Ser. No. 364,536

Int. Cl. G05d *16/00*

U.S. Cl. 137—84 **4 Claims**



A pneumatic signal limiter includes an integrated fluidic repeater and variable restrictor assembly having a pair of telescoping interconnected input and output body members with opposing and complementary recessed faces defining an input chamber and an output chamber to opposite sides of a diaphragm. The output portion includes an exhaust orifice and passageway within which a variable low limit restrictor is mounted to control the exhaust flow. The output body further includes an output passageway and intersecting exhaust passageway with an adjustable high limit restrictor connected directly to the exhaust passageway. The supply is connected to the output passageway in series with a restrictor through the intersecting passageway or a separate connection. Each restrictor is a needle valve which is adjustably secured within the housing with a conical point within a related limiter orifice. The threaded pin valve member has a relatively small cone angle and very fine adjusting threads. A closed loop control system includes a controller connected to sensors from a controlled variable source and from a master variable source through limiters. The controller is connected via a limiter to a control apparatus for the controlled variable unit.

3,812,874

DIFFERENTIAL PRESSURE SENSING VALVE

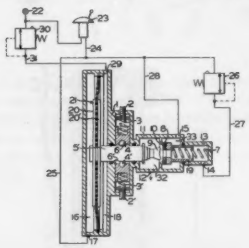
Makoto Takagi, Kobe, Japan, assignor to The Nippon Air Brake Co., Ltd., Kobe, Japan

Filed Nov. 17, 1972, Ser. No. 307,574

Claims priority, application Japan, Nov. 25, 1971, 46-110409

Int. Cl. G05d *16/06*

U.S. Cl. 137—110 **9 Claims**



A control valve device especially adapted for the control of a marine engine so as to bypass a critical region of its speed range in which a resonant frequency vibration is encountered. The control valve comprises a differential piston abutment the stem of which cooperates with valve means to control the fluid pressure communication between either a first or second inlet and an outlet which controls the throttle of said engine. Detent means provides a latching force in either of two extreme positions to prevent actuation of the piston abutment in response to a variable speed control signal until the speed control signal reaches a value sufficient to overcome the latching force of the detent means, which latching force corresponds to the upper limit of the critical speed range. In one extreme position of the piston abutment, the valve means is effective to pressurize the outlet in accordance with the output of a regulating valve adjusted to limit the speed control signal to a value corresponding to the lower limit of the critical speed range, while in the other extreme position, the valve means is effective to pressurize the outlet in accordance with the speed control signal. The detent means may be employed either alone or in conjunction with a second regulating valve, the output of which biases the piston abutment in opposition to the speed control signal, to establish the upper limit of the critical speed range.

3,812,875

VALVE FOR PROPORTIONING FLUID FLOW

Andreas Buhler, Krugersdorp, South Africa, assignor to Castle Brass Works (Proprietary) Limited, Transvaal Province, South Africa

Filed Feb. 25, 1972, Ser. No. 229,441

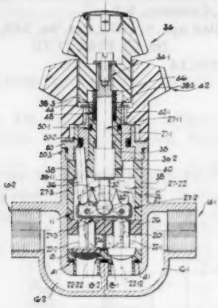
Claims priority, application South Africa, Mar. 12, 1971, 71/1640

Int. Cl. F16k *11/14*

U.S. Cl. 137—454.6 **3 Claims**

The proportioning of the flow of a plurality of fluids, by differentiaily adjusting the maximum degree of opening relative to their seats of a plurality of valve closure members controlling the flow of such fluids, the said differential adjustment taking place via a cam-like surface co-operating cam-follower

fashion with the closure members. More specifically a hot water and cold water mixer valve for domestic water installa-



tions for use in sinks, baths, or showers, to proportion the flows of hot and cold water through a single outlet and to maintain such flows when adjusted.

3,812,876

APPARATUS FOR CONTROLLING THE QUANTITY OF FLOW IN A FLUID MEDIUM

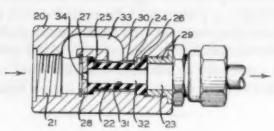
Horst Krieter, Ahlem, Germany, assignor to Westinghouse Bremsen-und Apparatebau, GmbH, Hannover, Germany

Filed Apr. 8, 1971, Ser. No. 132,382

Claims priority, application Germany, Apr. 23, 1970, 2019651

Int. Cl. G05d *7/01*

U.S. Cl. 137—501 **3 Claims**



A fluid flow regulator device including a resilient member subjected on one side to the actual pressure of fluid supplied at the inlet and on the other side to pressure of inlet fluid at a fixed reduced value, thereby establishing a pressure differential across the two sides of said resilient member for producing a distortion thereof into a fluid flow area between the inlet and the outlet for obstructing said area and establishing a flow rate of the fluid medium according to the pressure differential established.

3,812,877

PRESSURE REGULATOR ASSEMBLY

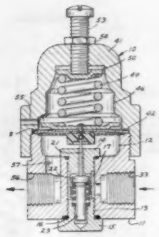
Joseph F. Fleischhacker, Minnetonka, and Thomas W. Hruby, Minneapolis, both of Minn., assignors to Tescom Corporation, Minneapolis, Minn.

Filed Aug. 28, 1972, Ser. No. 284,253

Int. Cl. G05d *16/06*

U.S. Cl. 137—505.42 **6 Claims**

A pressure regulator assembly that includes a valve body, a bonnet mounted on the body and in combination with the body mounting a flexible diaphragm to separate the body control chamber and bonnet chamber, a nozzle and back cap mounted by the body to provide an inlet chamber, a valve stem assembly extended through the inlet chamber and nozzle and resiliently urged toward the bonnet to block fluid flow through the nozzle to the control chamber, a centering disc abutting against the diaphragm and the valve stem assembly to in cooperation with a spring coiled about a circular axis retain the valve stem assembly radially spaced from the nozzle bore and back cap bore, a filter screen in the inlet chamber, and spring mechanism in the bonnet resiliently urging the diaphragm toward the back cap. In one embodiment an eyelet secures the diaphragm support plate to the diaphragm, and in combination with an integral, raised, annular ring portion (boss) on the diaphragm side of the centering disc and



abutting against the diaphragm in surrounding relationship to the eyelet provides for a self-relieving feature, while in the second embodiment the diaphragm support plate is not secured to the diaphragm and no raised ring portion is provided on the diaphragm side of the centering disc. In the second embodiment an adjustment knob is threaded to the bonnet and has part of the adjusting spring extended a substantial distance into the knob bore for the purpose of providing more space for the adjusting spring without increasing the size of the bonnet.

3,812,878

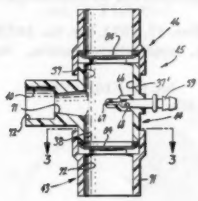
FAIL-SAFE BREATHING CIRCUIT AND VALVE ASSEMBLY FOR USE THEREWITH

Forrest M. Bird, and Henry L. Pohndorf, both of Palm Springs, Calif., assignors to Bird Corporation, Palm Spring, Calif.

Division of Ser. No. 183,822, Sept. 27, 1971. This application Mar. 19, 1973, Ser. No. 342,702

Int. Cl. F16k *15/16*

U.S. Cl. 137—512 **2 Claims**

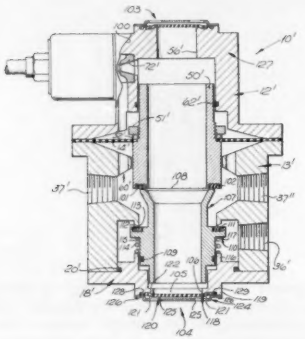


Breathing circuit for use in supplying gas under pressure to the airway of a patient having a control with an inspiratory and expiratory phase for controlling the supply of gas. Means is provided for supplying the gas to the patient to ventilate the patient. An exhalation valve which is controlled by the controller controls the flow of expiratory gases from the patient. Manual means is provided for ventilating the patient in the event of failure of the controller. A first valve assembly having an inspiratory one-way valve and an expiratory one-way valve is provided for maintaining the inspiratory and expiratory gases separate. The first valve assembly is coupled to a second valve assembly which is coupled to the exhalation valve assembly. A resuscitation bulb is coupled to the second valve assembly and is utilized for supplying gas under pressure through the second valve assembly and through the inspiratory one-way check valve to the airway of the patient.

3,812,879
VENT VALVE

Melvin Leon Terrell, Los Angeles, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed May 21, 1973, Ser. No. 361,880
Int. Cl. F16k *15/14*
U.S. Cl. 137—512.15 **1 Claim**

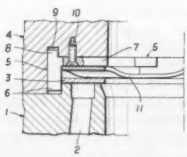


A vent valve including a circular rubber disc clamped around the exhaust port of a dump valve for use in an anti-skid brake control system. The dump valve has a lip around the port over which the disc is clamped. The disc is clamped by an annular flange of a circular plate. The disc has slots between the clamping position and the port. The plate has an offset central portion with holes therethrough partially aligned with the slots. The central portion of the plate keeps the disc from ballooning and rupturing.

3,812,880
COMPRESSOR VALVE

Friedrich Bauer, Vienna, Austria, assignor to Hoerbiger Ventilwerke Aktiengesellschaft, Braunhubergass, Vienna, Austria

Filed Nov. 17, 1972, Ser. No. 307,518
Claims priority, application Austria, Nov. 26, 1971, 10224/71
Int. Cl. F16k *15/08*
U.S. Cl. 137—516.15 **5 Claims**

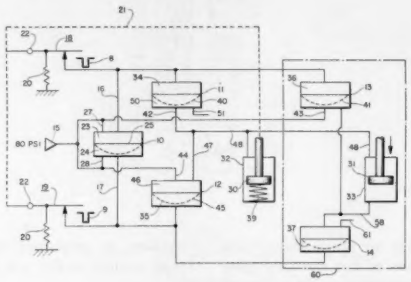


A compressor valve having a spring-loaded valve plate arranged between a valve seat and catcher, the valve plate being slidingly guided on axial guide webs to which radial catcher ribs are connected, wherein the guide webs and the catcher ribs together form guide segments, the guide segments being separate structural parts and which are fixed to the catcher as by screw fasteners.

3,812,881
FLUID RESPONSIVE CONTROL VALVES

Ernest David Anderson, Narragansett, and Larry Clyde Cowan, Saunderstown, both of R.I., assignors to Leesona Corporation, Cranston, R.I.

Filed Apr. 9, 1973, Ser. No. 349,451
Int. Cl. F16k *11/10*
U.S. Cl. 137—596.14 **7 Claims**



Fluid operated devices such as pneumatic or hydraulic rams are controlled by multiple-flow valve apparatus operable from momentary fluid trigger pulses to initiate both fluid power drive and exhaust functions. Thus a fluid pulse triggered bistable state fluid path logic control element controls in a logic network at least one pair of slave valves which respectively convey fluid under pressure from a source to an output channel and exhaust the output channel in response to the state of the logic element.

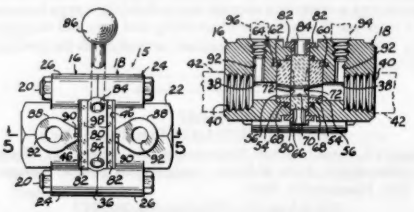
The logic elements and valves comprise a compartment with a diaphragm movable into opposing chambers in response to fluid pressures in contact therewith to open or close fluid flow paths through at least one chamber.

Accordingly, a piston may be reciprocated at will or other load devices may be operated from steady state or continuing fluid paths controlled by momentary fluid pulses either randomly or cyclically in a simple efficient fluid controlled valve arrangement of interconnected fluid logic elements.

3,812,882
RESTRICTOR VALVE

Julian S. Taylor, 8300 S.W. 8, Oklahoma City, Okla. 73108

Filed Jan. 2, 1973, Ser. No. 320,014
Int. Cl. F16k *37/00, 5/12*
U.S. Cl. 137—556.6 **6 Claims**



In a restrictor valve housing, having a flow passageway, a pair of plates having aligned orifices intersect the flow passageway within the housing and define an intermediate portion of the flow passageway. A central disk, interposed between the pair of plates, is provided with an opening mating and mismating with the axis of the flow passageway by axial rotation of the disk. An operating ring, secured to the

periphery of the central disk, projects outwardly of a portion of the outer limit of the housing permitting manual rotation of the central disk. Indicia, scored on the operating ring, provides visual indication of the position of the central disk opening with respect to the orifices in the pair of plates.

3,812,883

MECHANISM FOR PREVENTING THE STICKING OF SPOOL VALVES

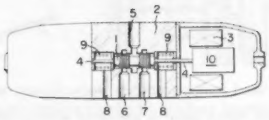
Takio Yokokawa, Takarazuka, Japan, assignor to Sumitomo Precision Products Company Limited, Hyogo Prefecture, Japan

Continuation of Ser. No. 881,997, Dec. 4, 1969, abandoned. This application Apr. 5, 1972, Ser. No. 241,469

Claims priority, application Japan, Dec. 28, 1968, 43-1054

Int. Cl. F16k *11/07*

U.S. Cl. 137—625.69 **1 Claim**



This invention is to make many annular grooves with a very narrow land width on the outer peripheral surface of the land of spool or on the inner peripheral surface of the spool hole of a valve body.

3,812,884

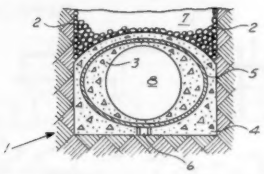
INTEGRALLY COMBINED PREFORMED CORE AND CAST-IN-PLACE OUTER COMPONENT SECTION FOR PIPELINE ASSEMBLIES

Thomas K. Breitfuss, 17541 Orange Tree Ln., Tustin, Calif. 92680

Continuation-in-part of Ser. No. 16,522, March 4, 1970, abandoned. This application Dec. 15, 1971, Ser. No. 208,353

Int. Cl. F16l *1/00*

U.S. Cl. 138—105 **16 Claims**



Conduit sections are disclosed for forming pipe lines. Sections have preformed core members of variable shapes and wall thicknesses and cast-in-place concrete components formed selectively on external surfaces and bonded to the core by mechanical and/or chemical means, thereby forming an integral structure. The chemical bonding utilizes adhesives and the like to secure the outer component on core surfaces while the mechanical bonding may utilize various structural shapes to secure the outer component to the inner core. A narrow trench-like form in selected contours and dimensions may be utilized as a side and bottom forming member into which concrete or other plastic mix is placed before it is cured. Preferably only slight clearance is provided between the core and the trench sides to allow placement and consolidation of the concrete mix. Components of variable thicknesses may be so formed, thereby providing greatest strength in areas where maximum support of the load is required.

3,812,885

REINFORCED SYNTHETIC PLASTIC PIPE

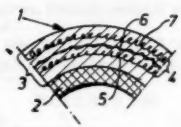
Johannes Otto Sajben, Krefeld-Gartenstadt; Axel Lippert, Krefeld-Verbert; Klaus Stumpen, Cologne, and Rainer Grunewald, KrefeldBockum, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 29, 1971, Ser. No. 184,844

Claims priority, application Germany, Oct. 15, 1970, 2050734

Int. Cl. F16l *11/04*

U.S. Cl. 138—125 **8 Claims**



A fibre-reinforced synthetic plastic pipe, with at least one tubular endless knitted fibre fabric which is saturated by a duroplastic material, is produced by applying the duroplastic material to the surface of a core or internal liner whereby the core or internal liner is surrounded by a knitted head, which produces the knitted fabric which is placed into the layer of duroplastic material before this layer is hardened and the finished pipe is continuously drawn away.

3,812,886

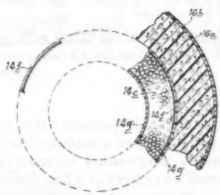
CRYOGENIC INSULATION

Harry Hallwood, Arlington Heights, Ill., assignor to Midwesco Enterprise, Inc., Chicago, Ill.

Filed July 5, 1972, Ser. No. 269,052

Int. Cl. F16l *9/14*

U.S. Cl. 138—149 **9 Claims**



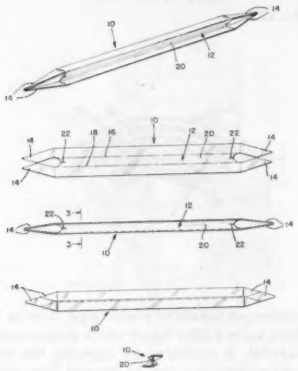
An insulating sleeve for use with transmission pipelines that carry liquid natural gas (LNG) at cryogenic temperatures, which insulator includes a tubularly-shaped bonded perlite core that is sealed in an envelope which is filled with a condensible gas such as carbon dioxide (CO_2). When the insulator is positioned near the cold transmission line, the CO_2 condenses thereby substantially evacuating the insulator, thus providing excellent insulation for the pipeline by reducing the heat gain to the LNG.

3,812,887

SHUTTLE FOR A HAND LOOM

William K. Stars, Durham, N.C., assignor to The Craftool Company, Inc., Woodridge, N.J.

Division of Ser. No. 149,236, May 2, 1971, Pat. No. 3,738,395.
This application Mar. 5, 1973, Ser. No. 338,202
Int. Cl. D03d 29/00
U.S. Cl. 139—29 6 Claims



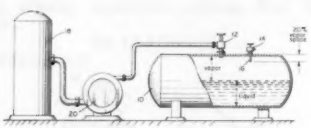
A shuttle for a hand loom is formed from a blank to define a substantially Z-shaped cross-sectional configuration with the central section adapted to have yarn wound thereon. The shuttle end portions are tapered and converge toward each other.

3,812,888

COMPRESSED LIQUID GAS FILLING SYSTEM

Charles Robert Dalton, 3107 Newton, No. 40, Torrance, Calif. 90505

Filed Aug. 25, 1972, Ser. No. 283,831
Int. Cl. B65g 5/00
U.S. Cl. 141—39 20 Claims



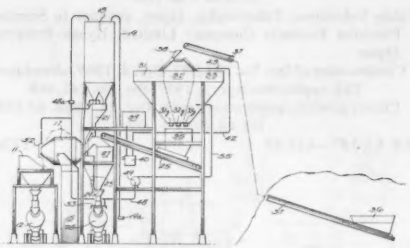
Escaping gas from the 20 percent valve of a compressed liquid gas tank is fed through a metered opening into an expansion chamber. A temperature sensitive element located within the expansion chamber has a first ambient temperature position and a second lower temperature position. The escaping gas normally has the same temperature position. The escaping gas normally has the same temperature as the ambient; however, as the tank is filled beyond the 80 percent volume position, liquid gas is drawn into the expansion chamber where it immediately expands and vaporizes. The expanding process draws heat from the immediate surroundings, thereby lowering the temperature of the expansion chamber and the temperature sensitive element which assumes the second temperature position. Movement of the temperature sensitive element is coupled with a spring-loaded control valve feeding the compressed liquid gas tank, thereby closing the spring-loaded valve and stopping the filling process.

3,812,889

DUST CONTROL SYSTEM UTILIZING TEMPORARILY STORED AGGREGATES

Robert W. Strehlow, New Berlin, Wis., assignor to Rexnord Inc., Milwaukee, Wis.

Filed Aug. 14, 1972, Ser. No. 280,401
Int. Cl. B65b 1/28
U.S. Cl. 141—93 6 Claims



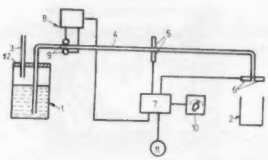
A concrete batch plant is provided with a subatmospheric air carried dust collection system which discharges under positive pressure into the body of the aggregates being processed through the plant. This aggregate body functions as a continuously renewed filter bed.

3,812,890

DEVICE FOR TRANSMITTING PREDETERMINED VOLUMES OF LIQUID FROM ONE CONTAINER TO ANOTHER CONTAINER

Werner Haas, Uttenreuth, and Klaus-Steffen Isensee, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Erlangen, Germany

Filed July 25, 1972, Ser. No. 274,901
Claims priority, application Germany, Aug. 5, 1971, 2139258
Int. Cl. B67d 5/54; G01n 21/26
U.S. Cl. 141—94 4 Claims



A device for transmitting predetermined volumes of liquid from one container to another container consists of a pipe leading from the first container to the second container and immersed into the liquid in the first container, means sealing the first container, a pressure transmitting tube introduced into the first container for producing pressure means pressing the liquid through the pipe and means measuring a predetermined liquid volume. The invention is particularly characterized in that there is a substantially constant super pressure in the first container and there are two signalling devices spaced from each other and located in the path of the flowing liquid. When the liquid front passes them they transmit a signal to a calculator which determines from these signals the volume of liquid passing through the pipe per time unit. Closure means for the liquid are connected to the calculator. They receive a closing signal formed by the incoming signals after the passing of time required for the transmission of desired liquid volume set at the calculator.

3,812,891

TOOL HEADS FOR USE IN MACHINING TIMBER

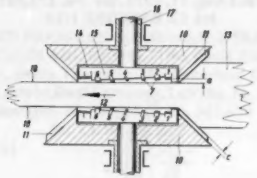
Alfred Reuter, Oberkirch/Baden, Germany, assignor to Gebruder Linck, Oberkirch/Baden, Germany

Filed Nov. 16, 1972, Ser. No. 307,298

Claims priority, application Germany, Nov. 27, 1971, 2158912

Int. Cl. B27c 9/02; B27l 11/00

U.S. Cl. 144—3 R 7 Claims



The present specification discloses a tool head for use in machining round timber trunks to produce beams or planks. The tool head includes a tool holder which is arranged concentrically and coaxially of the tool head, the tool holder and tool head being independently rotatably drivable about their common axis, the tool holder being drivable at a higher rotational speed than the tool head. Chipping blades are provided on the periphery of the tool head and finishing blades are provided on the working end of the tool holder. Thus, as a trunk is passed over the working front end of the tool head in a direction perpendicular to the rotational axis of the head, the chipping blades process the trunk and the finishing blades which can move at a higher speed than the chipping blades, smooth the even surface produced by the chipping blades.

3,812,892

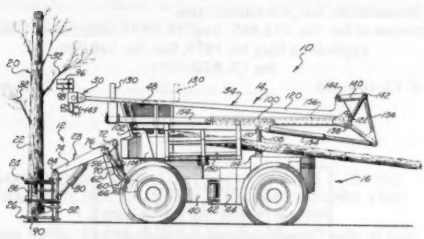
TREE HARVESTER AND METHOD

Stanley C. Jasinski; Leo J. Wenstrup, and Bryant Duffty, all of Woodstoch, Ontario, Canada, assignors to Eaton Yale Ltd., London, Ontario, Canada

Filed June 9, 1972, Ser. No. 261,237

Int. Cl. A01g 23/08

U.S. Cl. 144—309 AC 17 Claims



An improved tree harvester delimbs a tree as it is being felled. The tree harvester includes a vehicle having a felling boom assembly with a gripper assembly which securely grips a lower end portion of the trunk of a standing tree and a shear assembly which is actuated to sever the trunk of the tree adjacent to the ground. The felling boom assembly is then operated to swing the trunk of the tree from the standing position along an arcuate path extending over the vehicle. As the trunk of the tree moves along the arcuate path, it is delimbed by a delimber assembly which is disposed on the outer end of a delimber boom. The delimber assembly is moved along the trunk of the tree by pivoting a section of the delimbing boom relative to the vehicle as the tree moves from the standing position toward a fallen position. The delimber assembly advantageously includes a drive wheel which engages the trunk of the tree and is rotated by a motor to at least assist in moving the delimber assembly along the trunk of the tree as the tree is felled from the standing position.

3,812,893

METHOD AND APPARATUS FOR CUTTING VENEER PRODUCED BY MEANS OF TURNING ON A LATHE INTO SHEETS WITH UNIFORM FIBRE CONFIGURATION

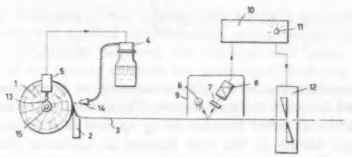
Armas Ervast, Keuruu, Finland, assignor to Messers. Timi Oy, Keuruu, Finland

Filed June 21, 1972, Ser. No. 265,019

Claims priority, application Finland, June 22, 1971, 1772/71

Int. Cl. B27l 5/00

U.S. Cl. 144—326 7 Claims



A method and apparatus for cutting veneer produced by means of turning on a lathe into sheets by first fitting the surface of the log of the veneer with cut markings that, as viewed from the axis of rotation of the log, lie at least approximately on the same radius or radii and by then cutting the veneer into sheets in accordance with the marks on the veneer surface so that a uniform fibre configuration is achieved. As a cutting mark is used a marking substance that is fed onto the log surface by means of a marking equipment synchronized with the movement of rotation of the log. The cutting mark is indicated by means of an indicator device and the cutter is adjusted to cut off the veneer at any desired phase shift in relation to the marks on the veneer face by using a control unit guided by the indicator equipment.

3,812,894

SCREW-DRIVER

James J. Bradbury, 413 University Blvd., Glassboro, N.J. 08028

Filed May 24, 1973, Ser. No. 363,636

Int. Cl. B25b 15/00

U.S. Cl. 145—50 R 1 Claim

A screw-driver designed for operation to exert maximum force on the screw being turned, by providing a gripping member on the shank for engagement by the fingers of the hand of the operator to forcibly press the bit of the tool into engagement with the head of the screw. This force, in an axial direction, supplements the force exerted by the other hand in the same direction, as the tool handle is held by the latter for rotating the screw-driver.

3,812,895

FASTENER AND RETAINER ASSEMBLY

Robert E. Smith, Kettering, Ohio, assignor to Dayton Progress Corporation, Dayton, Ohio

Filed Feb. 17, 1970, Ser. No. 12,040
Int. Cl. F16b 39/00
U.S. Cl. 151—41.74 2 Claims

A washer-like safety device serving as a retainer for a headed fastener, such as a screw. The invention contemplates the screw or other fastener being applied in a counterbored passage having in the wall thereof an undercut forming a groove. The retainer is here disclosed as a plate having parallel sides, rounded ends, and a central aperture. The ends are flat and co-planar while the side portions bounding the aperture are offset in the form of an inverted "V." The retainer is dimensioned to easily set in the counterbore cavity to overlie the slotted or socketed head of the screw, whereupon its side portions are flattened to project its rounded ends to bridge the cavity and enter the groove. This retains the screw in the body to which it is applied while permitting its rotation for engaging to or disengaging from a related structure.

ERRATUM

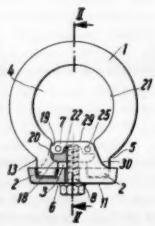
For Class 152—241 see:
Patent No. 3,813,049

3,812,896

CLOSURE MEMBER FOR ANTISKID CHAINS FOR TIRES

Gunter Witzel, Aalen, and Anton Muller, Unterkochen, both of Germany, assignors to Eisen-und Drahtwerk Erlau Aktiengesellschaft, Aalen, Germany

Filed July 24, 1972, Ser. No. 274,629
Claims priority, application Germany, July 22, 1971, 21365651
Int. Cl. B60c 27/04
U.S. Cl. 152—242 12 Claims



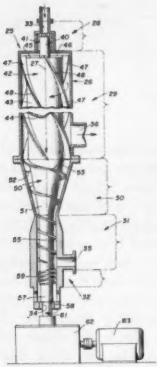
A closure member, especially for antiskid tire chains in which a link member is open at one side and a holding member is seated on the outside of said link member in bridging relation to said opening while a clamping shoe inside the link member also bridges said opening and nests in and is clamped to said holding member.

3,812,897

WIPED FILM DEVOLATILIZATION PROCESS

George A. Latinen, deceased, late of Springfield, Mass. (by May V. Latinen, administratrix), assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 11, 1971, Ser. No. 171,987
Int. Cl. B01d 1/22, 1/28
U.S. Cl. 159—49 7 Claims



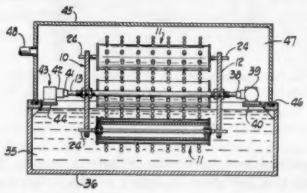
An improved devolatilization process for removing low molecular weight components from a dispersion of polymer in such low molecular weight components. The process employs a zone of separation wherein high mechanical energy dissipation is employed and wherein cocurrent flow of polymer with vapors of low molecular weight components through the separation zone is utilized.

3,812,898

METHOD FOR FORMING CERAMIC SHELL MOLDS

Robert A. Horton, Chesterland, Ohio, assignor to Precision Metalsmiths, Inc., Cleveland, Ohio

Division of Ser. No. 172,035, Aug. 16, 1971, abandoned. This application May 16, 1973, Ser. No. 360,796
Int. Cl. B22c 9/04
U.S. Cl. 164—25 8 Claims



A method is provided for simultaneously coating a plurality of pattern set-ups with refractory material in a single operation during the production of ceramic shell molds. An array of circumferentially spaced pattern set-ups is mounted for rota-

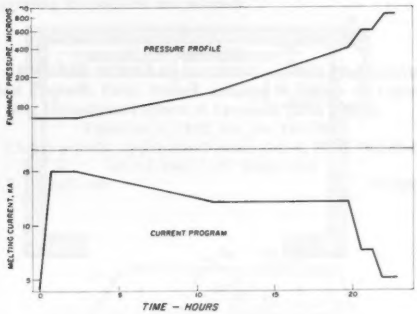
tion about a horizontal axis so that each set-up is moved about the axis between a raised position and a lowered position in which the set-up is at least partially immersed in refractory material. In one preferred embodiment of the invention provision is made for rotating each set-up about its longitudinal axis during the coating operation.

3,812,899

CONTROLLED PRESSURE CONSUMABLE ELECTRODE VACUUM ARC REMELTING PROCESS

Rene Schlatter, Derry Township, Westmoreland County, Pa., assignor to Latrobe Steel Company, Latrobe, Pa.

Filed Mar. 28, 1973, Ser. No. 345,670
Int. Cl. B22d *27/02*
U.S. Cl. 164—52 **10 Claims**



Manganese or other high vapor pressure elements are prevented from volatilizing during vacuum arc remelting by introducing a small flow of inert gas into the mold and varying the rate of exhaust of gases from the mold from a maximum value when the arc zone is at the bottom of the mold to a minimum value when the arc zone is at the top of the mold so as to maintain a pressure in the arc zone higher than the vapor pressure of the volatile element.

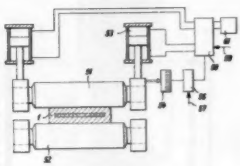
3,812,900

METHOD OF OPERATING A MULTI-ROLL CASTING MACHINE DURING AND AFTER FREEZING OF THE LIQUID CORE OF THE STRAND

Georg Bollig, Buderich; Horst Grothe, Kaarst, both of Germany; Bernhard Knell, Thalwil, Switzerland; Armin Thalmann, and Josef Zeller, both of Weesen, Switzerland, assignors to Schloemann Aktiengesellschaft, Dusseldorf, Germany and Concast AG, Zurich, Switzerland, part interest to each

Filed June 29, 1972, Ser. No. 267,531
Claims priority, application Germany, July 3, 1971, 2133144
Int. Cl. B22d *11/12*
U.S. Cl. 164—76 **4 Claims**

A method of and apparatus for operating a multiple-roll machine, especially a multiple-roll withdrawing machine or a multiple-roll combination withdrawing and straightening machine in a continuous casting plant, wherein a casting and a dummy bar are passed between pairs of rolls. By means of each pair of rolls there is applied to the casting and the dummy bar as they pass therebetween, the requisite contact pressure for generating the necessary traction or withdrawal force.



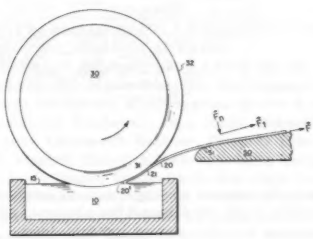
When the thickness of the casting falls below a prescribed thickness there is applied to the casting only a contact pressure of a magnitude required for traction and when the thickness of the casting exceeds the prescribed thickness the contact pressure is increased to a greater value calculated to again reduce the thickness of the casting to the prescribed thickness.

3,812,901

METHOD OF PRODUCING CONTINUOUS FILAMENTS USING A ROTATING HEAT-EXTRACTING MEMBER

Oliver M. Stewart, Columbus; Robert E. Maringer, Worthington, and Carroll E. Mobley, Jr., Columbus, all of Ohio, assignors to Battelle Development Corporation, Columbus, Ohio

Filed Jan. 30, 1973, Ser. No. 328,121
Int. Cl. B22d *11/06*
U.S. Cl. 164—87 **12 Claims**

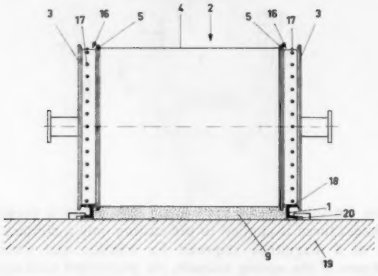


A method of stabilizing the release point of a filamentary product formed from the melt on a rotating heat-extracting member by applying a tension force to the filament subsequent to its release from the rotating member with the tension force of a magnitude to override variations in the adhesion of the filament to the rotating member. The filament is necessarily supported between the release point and the means used to generate the tension force in the filament.

3,812,902
APPARATUS FOR PREPARING OPEN SAND MOLDS SUITABLE FOR CASTING LARGE METAL PLATES

Heinz Arbenz, Andelfingen, and Jakob Caspar, Kaltenbach, both of Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Nov. 3, 1971, Ser. No. 195,274
Claims priority, application Switzerland, Nov. 6, 1970, 16462/70
Int. Cl. B22c *15/02*
U.S. Cl. 164—208 **7 Claims**

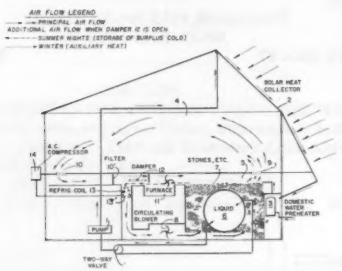


Open sand molds suitable for casting large metal plates, especially aluminium plates for building facades are prepared by using a large roller bearing a model and rolling spaced guides to level a bed of moldable substance therebetween and simultaneously impressing the molding pit in the bed.

3,812,903
HEAT, COLD AND DRY STORAGE

Harry E. Thomason, 6802 Walker Mill Rd., S.E., Washington, D.C. 20027

Filed Apr. 19, 1972, Ser. No. 245,449
Int. Cl. F24f *3/14*
U.S. Cl. 165—3 **10 Claims**



During the summer cooling season air conditioning equipment filters, cools and dehumidifies a home or other building. To minimize use of power on hot days during "brownouts" and "blackouts" the present invention operates for cold storage to store coolness produced at off-peak power periods. Additionally, the apparatus stores "dryness," so that the air may be dehumidified, such as on hot muggy days, even when the refrigeration apparatus is shut off. And, coolness with dehumidification are achieved with lower overall power consumption because most of the "coldness" is produced during the cool night when the refrigerating equipment is more efficient. In the event the weather becomes too chilly on a cool summer night heat is automatically provided.

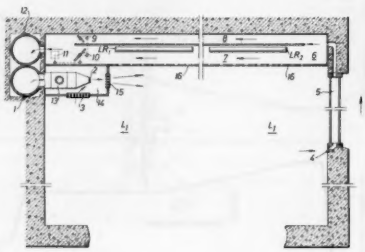
Controls provide for automatic cooling and dehumidification 24 hours a day, plus automatic storage of coolness when not needed to meet the heat load, plus heating if needed.

During the heating season solar produced heat, or heat from another source, is stored and used automatically as needed. Auxiliary heat also is automatically provided as needed.

3,812,904
DEVICE FOR AIR CONDITIONING A NUMBER OF ROOMS HAVING MUTUALLY DIFFERENT HEAT REQUIREMENTS, PREFERABLY ROOMS HAVING A HEAT REQUIREMENT VARYING WITH TIME

Folke Westergren, Skarholmen, Sweden, assignor to Aktiebolaget Svenska Flaktfabriken, Nacka, Sweden

Filed Mar. 29, 1973, Ser. No. 346,187
Claims priority, application Sweden, Apr. 10, 1972, 4600/72
Int. Cl. F24f *3/00*
U.S. Cl. 165—22 **5 Claims**



A system for air conditioning buildings in which the heat generated by the bulbs in lighting fixtures selectively is used to heat the room, or is carried away with the exhaust air. The system injects central air into the room adjacent the fittings, and exhaust air from the room is conducted away first through the outside window area and then through the lighting fixtures either in a path in direct contact with the bulbs or in a path bypassing direct contact with the bulbs. Dampers are provided to control the proportion of flow through the two paths in the fixtures and thereby to control the proportion of the heat generated by the bulbs which is used to heat the room on one hand and the portion which is discharged with the exhaust air on the other hand. The dampers are controlled in accordance with the demand for heat in the room and an auxiliary heater is provided for the injected air, for operation when the bulbs do not supply sufficient heat to maintain the desired temperature in the space.

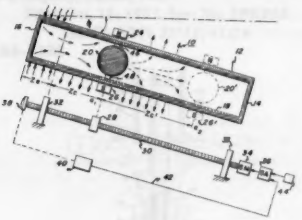
3,812,905
DYNAMIC BARRIER FOR HEAT PIPE

Randolph W. Hamerdinger, Glendora, and Phillip D. Dunn, Highland Park, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 17, 1972, Ser. No. 307,673
Int. Cl. F28d *15/00*
U.S. Cl. 165—32 **14 Claims**

A heat pipe in which the operating temperature and pressure of the vaporized working fluid is adjustable by means of a dynamic barrier inside the heat pipe. A magnetizable member, in conjunction with a working fluid which is magnetizable,

form a hermetic seal, or barrier, at predetermined positions along the length of the heat pipe. The hermetic seal, in the



preferred embodiment, is positioned to a point along the heat pipe length whereby the vaporized working fluid is at a desired operating temperature and pressure.

3,812,906

ARMORED VEHICLES HOUSING A COOLED ENGINE

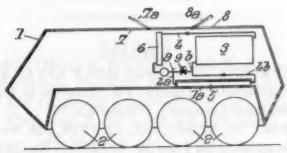
Jean Panhard, Paris, France, assignor to Societe de Contrutions Mecaniques Panhard & Levassor, Paris, France

Filed Oct. 4, 1971, Ser. No. 186,301

Claims priority, application France, Oct. 6, 1970, 70.35949

Int. Cl. B60f *3/00*; **B60h** *3/04*

U.S. Cl. 165—44 **9 Claims**



The armored vehicle has a closed body comprising at least one internal engine equipped with a cooling system comprising at least one heat exchanger for the cooling fluid. The heat exchanger is constituted by at least one compartment housed inside the body of the vehicle and bounded in part by a conductive wall belonging to the body as an armor element. The removal of the major portion of the heat given up by the cooling fluid is effected through this wall. A conventional heat exchanger with ambient air cooling can also be provided. This conventional heat exchanger is isolated and rendered inoperative by a valve when the vehicle is in an operational situation or when its body must be entirely sealed with respect to the ambient medium.

3,812,907

HEAT EXCHANGERS

David Lees Linning, Warrington, England, assignor to United Kingdom Atomic Energy Authority, London, England

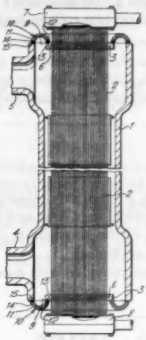
Filed May 8, 1972, Ser. No. 251,238

Claims priority, application Great Britain, June 25, 1971, 21315811/71; May 26, 1971, 17295/71

Int. Cl. F28g *7/00*

U.S. Cl. 165—83 **9 Claims**

In a tube-in-shell heat exchanger, each tube plate is secured along its outer edge to the shell of the heat exchanger by an intermediate annular member extending across a gap between the outer edge of the tube plate and the shell, the radial cross-section of the annular member being of arched form. Thermal insulation for the tube plates consisting of a series of plate



members edge on to the tube plate and arranged parallel one to another between successive rows of the heat exchanger tubes, is also described.

3,812,908

HEAT TRANSFERRING DEVICE

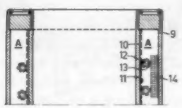
Patrick Coville, Le Chesnay, and Andre Laurencier, Courbevoie, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 24, 1972, Ser. No. 256,579

Claims priority, application France, Feb. 25, 1972, 72.06482

Int. Cl. F28d *15/00*

U.S. Cl. 165—105 **6 Claims**



A device of the type known as heat pipe in which the heating means are inside the chamber and covered with a capillary structure in contact with the liquid to be evaporated.

Applicable notably to isothermal oven. FIG. **1.**

3,812,909

APPARATUS FOR HEATING AND COOLING LONG CYLINDRICAL PARTS

Anatoly Viktorovich Rogalsky, ulitsa Chicherina 22, kv. 8; Vitaly Mikhailovich Markevich, ulitsa Barkalskaya 11, kv. 125; Georgy Naumovich Kheifets, ulitsa Kirova 8, kv. 29; Jury Leonidovich Zaichenko, ulitsa Karla Libknekhta 41, kv. 5; Valery Efremovich Baburov, Prospekt Petrovskogo 10, kv. 3; Vladimir Petrovich Pavlovsky, ulitsa Karla Libknekhta 7, kv. 5; Eduard Vasilievich Golban, ulitsa Artema 8, kv. 2; Leonid Naumovich Pechennik, Pereulok Ushinskogo 8, kv. 2; Zakhar Osipovich Knyazhinsky, ulitsa Kirova 8, kv. 4, all of Dnepropetrovsk; Nikolai Alexandrovich Bogatov, ulitsa Komso-Molskaya 23, kv. 13, Volzhsk; Jury Isaakovich Raichuk, ulitsa Gagarina 8, kv. 33, Dnepropetrovsk; Viktor Nikolaevich Zaritsky, ulitsa Karla Libnekhta 577, kv. 30, Dnepropetrovsk, and Evgeny Fedorovich Grodzitsky, ulitsa Kosiora 37, kv. 1, Dnepropetrovsk, all of U.S.S.R.

Filed Aug. 31, 1972, Ser. No. 285,193

Int. Cl. F28g *7/00*

U.S. Cl. 165—120 **2 Claims**

An apparatus having at least two mechanisms for rotary conveyance of treated cylindrical articles through a multisec-

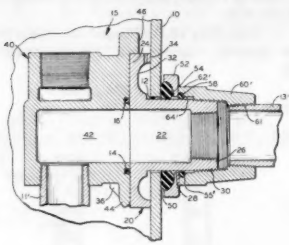
tional furnace and a multisectional cooler. The mechanisms are mounted on frames between sections of the furnace and cooler.

Each mechanism has a ring mounted rotatable with respect to its longitudinal axis on two rolls mounted in the frame. The

ring longitudinal axis is angularly misaligned with respect to the apparatus longitudinal axis. The article being treated rests on the inner surface of the ring and is rotatively moved forward during rotation of the ring.

The mechanisms are provided with means for fixing the ring in the axial direction.

3,812,910
POSITIVE SEAL PITLESS WELL ADAPTER
William Wellstein, P.O. Box No. 430, Fostoria, Ohio 44830
Filed Nov. 20, 1972, Ser. No. 308,025
Int. Cl. E21b *33/03*
U.S. Cl. 166—88 **5 Claims**

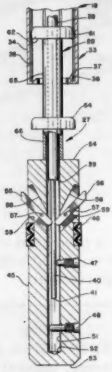


A pipe connector having a duct therethrough for connecting a lateral pipe to a well casing and having an inner casing connector provided with a tubular stem which extends through a hole in the well casing wall. Mounted on this stem externally of the casing wall are a casing contacting O-ring gasket, a follower washer, a stem O-ring gasket and a compression nut which compresses the gaskets into fluid - tight engagement with the casing wall and the stem upon which they are mounted. Also annular grooves to partially seat these O-ring gaskets are provided in the faces of the follower washer and/or the gasket confronting face of the nut.

3,812,911
RETRIEVABLE BLANKING PLUG
Roy R. Vann, P.O. Box 38, Artesia, N. Mex. 88210
Filed June 11, 1973, Ser. No. 368,717
Int. Cl. E21b *23/00*
U.S. Cl. 166—135 **10 Claims**

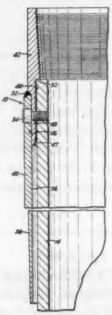
Combination wireline fishing tool and retrievable blanking plug for use in conjunction with a seating nipple. The blanking plug has a fishing neck which extends from a shoulder located thereon. The fishing neck includes spaced overshot engaging members so that a fishing tool in the form of an overshot can be forced into engagement with either of the members.

An axial counterbore extending into the blanking plug has a combination stop means and pressure relief means located therein, in the form of spaced breakable plugs. The counterbore further includes means for releasing the blanking plug from the seating nipple. Attached to the overshot in axially aligned relationship therewith is a probe arranged whereby part of the overshot must be positioned in attached relationship between the two spaced members in order for the probe



to break a relief plug and equalize the pressure across the blanking plug. Part of the overshot must next be moved into a position between the shoulder and the lowermost overshot engaging member and the second breakable plug broken by the probe in order for the release device to be actuated.

3,812,912
REPRODUCIBLE SHOT HOLE APPARATUS
Paul C. Wuenschel, Glenshaw, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.
Division of Ser. No. 82,907, Oct. 22, 1970, Pat. No. 3,693,717.
This application June 30, 1972, Ser. No. 267,955
Int. Cl. E21b *17/02*
U.S. Cl. 166—207 **9 Claims**

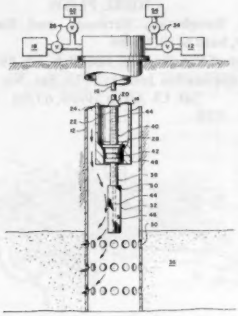


A reproducible shot hole for geophysical use wherein a deformable metal liner, such as aluminum, of predetermined diameter, wall thickness, and alloy is selected, and the annulus between the liner and the hole filled with sand-cement under pressure, so that the lined hole will withstand repeated explosions by expanding.

3,812,913
METHOD OF FORMATION CONSOLIDATION

William C. Hardy, Richardson; Edward F. Schultze, Dallas, and John C. Shepard, Richardson, all of Tex., assignors to Sun Oil Company, Dallas, Tex.

Filed Oct. 18, 1971, Ser. No. 189,854
Int. Cl. E21b *33/13, 43/24*
U.S. Cl. 166—288 6 Claims

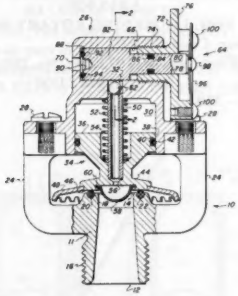


A process of formation consolidation is provided wherein the formation is heated and a substance which acts as a bonding agent when heated is then flowed into the formation. To insure a clean bonding surface, in situ combustion may be initiated in the area to be consolidated prior to injection of the bonding substance. Heat may be supplied to the formation after injection of the bonding substance.

3,812,914
AUTOMATIC ON-OFF SPRINKLER

James William Mears, Warwick, R.I., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Aug. 2, 1973, Ser. No. 385,130
Int. Cl. A62c *37/06, 37/10*
U.S. Cl. 169—20 7 Claims

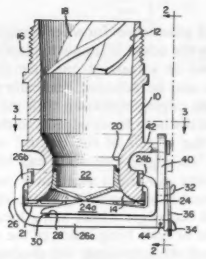


An automatic water sprinkler has a cylindrical control chamber formed in a body portion and a line pressure operated piston valve slideably and sealingly disposed therein for closing a downstream end of a fluid inlet member. A centrally positioned tubular guide member is mounted to the piston and inserted into a bore formed in said body portion for guiding the piston in the control chamber during reciprocation. A passage is centrally formed in said piston for communicating the inlet member with the control chamber through the tubular guide and bore so that the control chamber is exposed to the inlet fluid pressure. The effective area of the piston exposed to the control chamber fluid pressure is greater than that exposed to the inlet member fluid pressure to thereby establish a differential force for closing the piston valve. A ball is disposed in the bore and adapted to rest on an end of the tubular member for closing the tubular guide member and forming a unidirectional check valve to prevent sprinkler operation as a result of fluctuating inlet fluid pressure.

3,812,915
DISCHARGE HEAD HAVING CONSTANT FORCE PLUG RETAINING MEMBER

William L. Livingston, Sharon, Mass., assignor to Factory Mutual Research Corporation, Norwood, Mass.

Filed June 4, 1973, Ser. No. 366,740
Int. Cl. A62c *37/12*
U.S. Cl. 169—38 12 Claims

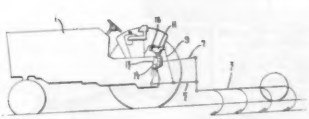


A pressure responsive discharge head in which an expellable plug is disposed in the outlet of a body member having an inlet adapted for connection to a source fo fluid, with the plug being connected relative to the body member in a position preventing the discharge of fluid from the outlet. A connector is provided which applies a constant force to the plug to maintain it in the flow preventing position and which is adapted to release the plug in response to a predetermined fluid pressure existing in the body member.

3,812,916
DRAFT SENSING UNIT FOR TRACTOR

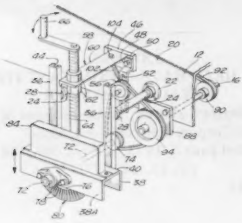
Jean J. Lasoen, Villepreux, France, assignor to Massey-Ferguson Inc., Detroit, Mich.

Filed Nov. 22, 1971, Ser. No. 200,958
Int. Cl. A01b *63/112*
U.S. Cl. 172—7 8 Claims



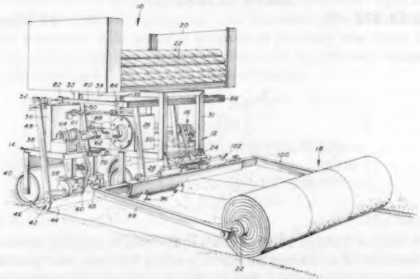
A tractor linkage control has a draft load measuring device in the form of an elongated bar extending between two spaced supports on the tractor, the draft links are connected to the bar to cause the same to deflect under draft loads, measuring means are provided to measure the maximum angular deflection of the bar to provide a usable control signal over a large range of draft forces. The measuring means includes an elongated member clamped at one end to the bar at its point of maximum deflection and having its free end operable to move a cam member carried on the bar.

3,812,917
POWER EDGER ATTACHMENT FOR TRACTOR
Lowell D. Strate, 1340 Greenview Dr., La Habra, Calif. 90631
Filed May 26, 1972, Ser. No. 257,316
Int. Cl. A01d 35/00, 55/18
U.S. Cl. 172—15 1 Claim



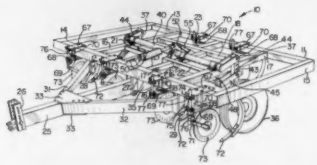
A power edger attachment for wheel supported lawn cutting tractors wherein the edger is supported laterally outwardly of the machine and its wheels at one side thereof, the edger wheel or cutter can be adjusted vertically from the driver's seat to permit an edging operation with the tractor traveling on the surface of the lawn being edged and the edger wheel extending below the wheels of the tractor, or with the edger wheel elevated, an edging operation can be performed with the tractor running in a street adjacent a curb with the edger wheel driving mechanism extending above and beyond the top of the curb and the edger wheel being located between the curb and the sod or lawn lying inside of the curb opposite the street side thereof. Also, an edger wheel construction made up of flexible scarifying elements extending from a hub so the machine can be driven over a sidewalk or similar hard surface without damage to the edger wheel and without necessitating elevation of the wheel by the operator of the machine.

3,812,918
GANGED SOD HARVESTING APPARATUS
Martin Beck, P.O. Box 752, Auburn, Ala. 36830
Continuation-in-part of Ser. No. 149,624, June 3, 1971, abandoned, which is a continuation-in-part of Ser. No. 57,933, July 24, 1970, Pat. No. 3,747,686, which is a continuation-in-part of Ser. No. 605, Jan. 5, 1970, abandoned. This application Dec. 12, 1972, Ser. No. 314,310
Int. Cl. A01b 45/04
U.S. Cl. 172—19 9 Claims



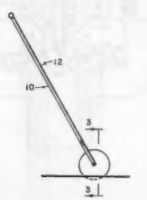
Apparatus for harvesting a plurality of continuous strips of sod, each of uniform thickness, the apparatus comprising a plurality of sod cutters with a central drive means wherein the sod cutters are ganged together. Ganging is accomplished by means of connecting bars and links whereby each cutter is able to move in the vertical direction independently of its interconnected cutters without causing undue wear on, or distortion of its connecting members or drive means. The apparatus is further provided with stabilizer arms which prevent movement of the upper portion of each unit with respect to adjacent units in the direction of travel of the ganged sod harvesting apparatus.

3,812,919
CHISEL PLOW
Herbert W. Baughman, Vermont, and Harry G. Yetter, Colchester, both of Ill. 61484
Continuation of Ser. No. 225,180, Feb. 10, 1972, abandoned. This application June 1, 1973, Ser. No. 366,152
Int. Cl. A01b 59/00, 65/06
U.S. Cl. 172—328 3 Claims



A rigid wheeled frame supporting or carrying gang type, earth-engaging and working chisel or shovel plow, wherein the wheel mounts are vertically adjustable and lockable in adjusted position with relation to a traversed surface or earth to be, or being worked, and cultivated; the frame, in all positions of vertical adjustment being maintained level and the draft-tongue of the wheeled frame concurrently automatically adjusted to compensate for effected changes in the particular height adjustment of both the frame and earth-working devices carried thereby, thus assuring proper hitching to, and towing, by a tractor or other draft vehicle with the frame and earth-working devices level, when active and/or inactive, when traveling to or from a cultivating project over a rough or uneven way and having adjustable brackets providing multiple mounts for supporting a plurality of cultivating devices at equally spaced intervals.

3,812,920
SOIL-LOOSENING ROTARY HOE
Helen R. Green, Council Bluffs, Iowa
Filed Aug. 14, 1972, Ser. No. 280,719
Int. Cl. A01b 21/08
U.S. Cl. 172—350 16 Claims

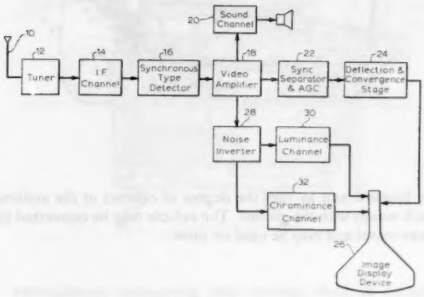


A rotary hoe having a rotating disc with blades on its right and left sides, each blade having a sharp ground-penetration edge facing away from the axis of the disc and inclined with respect to the disc as seen in front view, and inclined with respect to the radius of the disc as seen in side elevation, said hoe having an elongated handle means provided with right and left arm engaging portions disposed above right and left hand grips.

3,812,921
VIDEO SIGNAL PROCESSING SYSTEM AND METHOD WITH ABOVE-WHITE-LEVEL NOISE INVERSION

Peter C. Skerlos, Arlington Heights, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed July 24, 1972, Ser. No. 274,766
Int. Cl. H04n *5/44*
U.S. Cl. 178—7.3 R **7 Claims**

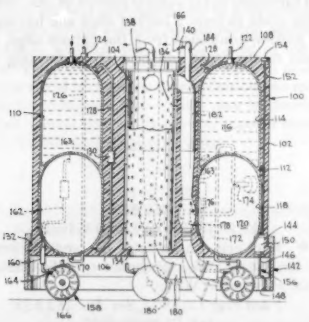


This disclosure depicts method and apparatus for processing a television video signal, particularly for processing a noise-adulterated video signal as developed by synchronous-type video detectors. The disclosed method and apparatus involves sensing in a video signal developed by a synchronous-type video detector noise components having amplitude levels exceeding a predetermined reference level above a level which corresponds to a maximum white video display. A modified video signal is developed for supply to the luminance controls of a video image display device. In the modified signal the sensed above-white-level noise energy is inverted so as to prevent over-driving of the associated image display device. The noise-adulterated video signal from the video detector is supplied directly to a sync separator and AGC stage without noise inversion so as to avoid the introduction of a spurious DC component capable of falsely altering the video signal level relative to an AGC reference level.

3,812,922
DEEP OCEAN MINING, MINERAL HARVESTING AND SALVAGE VEHICLE

Bernard G. Stechler, 766 Brady Ave., Bronx, N.Y. 10462

Continuation-in-part of Ser. No. 848,012, Aug. 6, 1969, abandoned. This application Feb. 16, 1972, Ser. No. 226,911
Int. Cl. E21b *7/12*; **B63c** *7/00*; **E02f** *3/88*
U.S. Cl. 175—6 **26 Claims**

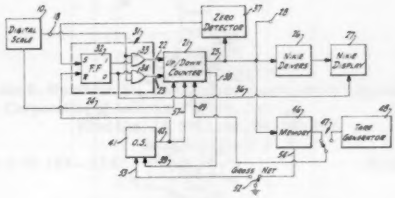


A deep ocean mining, mineral harvesting and salvage vehicles including a body integrally formed of a positive buoyancy material and having recesses therein to receive a plurality of variable buoyancy tanks. Eduction and coring mining systems are alternatively provided for the vehicles, and the vehicles are propelled along the floor of the ocean by means of high velocity jets and/or turbine wheels.

3,812,923
WEIGHT DISPLAY SYSTEM AND METHOD

Frank C. Rock, Santa Rosa, Calif., assignor to National Controls, Inc., Santa Rosa, Calif.

Filed July 20, 1972, Ser. No. 273,415
Int. Cl. G01g *23/14*
U.S. Cl. 177—1 **13 Claims**

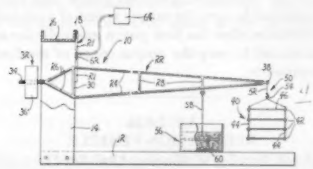


System and method for displaying gross weight or net weight, as desired. Net Weight is determined by preloading the tare weight into an up/down counter which counts a digital signal corresponding to the gross weight of a load. Initially the counter counts down toward zero, and upon reaching zero it counts up until the count is completed. If the count is completed before the counter reaches zero, a minus sign is displayed with the count.

3,812,924
DEVICE FOR MONITORING A CHANGE IN MASS IN VARYING GRAVIMETRIC ENVIRONMENTS

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Joseph P. Valinsky, Huntington Beach, Calif.

Filed Mar. 13, 1973, Ser. No. 340,791
Int. Cl. G01g *19/00, 3/14, 1/18*
U.S. Cl. 177—200 **3 Claims**



A remotely operable device for detecting changes as they occur in the mass of a selected specimen. The device is

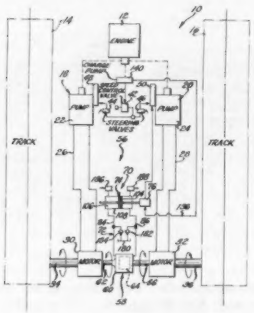
characterized by a balance beam including at one end thereof a support for receiving a specimen having a changing mass and suspension means, including a flexure, supporting the beam near its center of gravity for pivotal movement imparted thereto proportionally to changes occurring in the mass of the specimen, and strain gages coupled with the flexure for providing a read-out indicative of the pivotal movement imparted to the beam.

3,812,925

HYDROSTATIC TRANSMISSION CONTROL SYSTEM

Robert B. Lauck, Southfield; Lawrence L. Meyer, Northville, both of Mich., and Charles H. Cargo, Nolanville, Tex., assignors to Eaton Corporation, Cleveland, Ohio

Filed Mar. 1, 1973, Ser. No. 336,911
Int. Cl. B62d *11/04*; B15b *15/22*
U.S. Cl. 180—6.48 **18 Claims**



An improved straight tracking control system equalizes the output speeds of a pair of hydrostatic transmissions during straight forward movement of a vehicle. The control system includes a pump assembly having a housing which is rotated at a speed which varies as a function of variations in the speed of one of the tracks of the vehicle. This housing defines a pumping chamber in which a rotor is rotated at a speed which varies as a function of variations in the speed of the other track of the vehicle. When the vehicle is moving straight forward and the two tracks are being driven at the same speed, there is no relative rotation between the rotor and housing so that the pump assembly is ineffective to pump fluid. Upon acceleration of one of the tracks relative to the other and a resulting relative rotation between the housing and rotor, the pump assembly is effective to discharge fluid under pressure to a piston and cylinder assembly. This fluid actuates the piston and cylinder assembly to operate a valve. Operation of the valve ports fluid to an actuator assembly to vary the output speed of one of the hydrostatic transmissions in a manner so as to equalize the output speeds of the two hydrostatic transmissions. In one embodiment of the invention, a second piston and cylinder assembly is actuated to vary the output speed of a second hydrostatic transmission after the first piston and cylinder assembly has been actuated to vary the output speed of the first hydrostatic transmission.

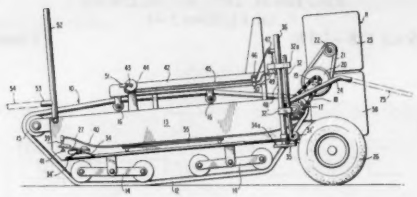
3,812,926

RECREATION VEHICLE

Hubert Tidwell, Box 57, Wellington, Utah 84542

Filed Feb. 1, 1973, Ser. No. 328,725
Int. Cl. B62d *55/02*
U.S. Cl. 180—9.24 **8 Claims**

A recreation vehicle for rough terrain cross-country travel by one or two passengers includes a forward tracked pulling unit and a rear wheeled power unit which is steerable from the forward unit. Additional controls on the forward unit effect braking of the rear wheeled unit and raising and lowering of



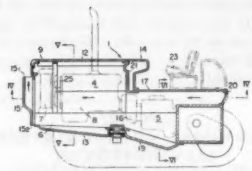
the forward unit to vary the degree of contact of the endless track means with the ground. The vehicle may be converted to water travel and may be used on snow.

3,812,927

ENDLESS TRACK TYPE TRACTOR

Ryohei Kawamura, Nomi-gun, Ishikawa-ken, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Aug. 30, 1971, Ser. No. 175,865
Claims priority, application Japan, Aug. 29, 1970, 45-75420
Int. Cl. B60k *11/04*
U.S. Cl. 180—54 A **6 Claims**



An endless track type tractor which has a radiator mask projected forwardly at the central portion of one side edge of a rectangular plate to form a curved edge and having a central recessed portion continued from the curved edge, said mask being fixed to the front end of a cover forming an engine room.

3,812,928

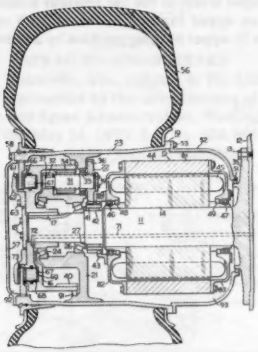
ELECTRIC POWERED WHEEL

Harvey W. Rockwell, Springfield, Ill., and William L. Ringland, Greendale, Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed May 12, 1972, Ser. No. 252,633
Int. Cl. B60k *7/00*
U.S. Cl. 180—65 F **22 Claims**

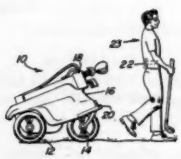
A compact electric wheel unit using a high torque, moderate speed inside out electric motor and a planetary

speed reducer wherein a friction brake is mounted on a stationary ring gear component of the planetary gearing. In one



embodiment, lubricating and cooling fluid is circulated through the motor, gear train and brake.

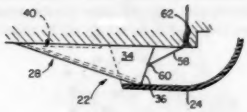
3,812,929
SELF-PROPELLED GOLF CART
Claude Anthony Farque, Fayetteville, Ark., assignor to Citation Manufacturing Company, Inc., Siloam Springs, Ark.
Filed July 26, 1971, Ser. No. 166,051
Int. Cl. B60k *27/06*
U.S. Cl. 180—98 **10 Claims**



A self-propelled, battery powered vehicle adapted to carry golf clubs and the like and including means to automatically follow a golfer carrying a small transmitter as he walks about a golf course. The transmitter generates a signal pattern which magnetically couples the transmitter to a directional antenna system carried by the vehicle. An automatic guidance system in the vehicle provides signals which control the individual speeds of right and left wheel drive motors to affect steering and vehicle speed in response to the position and movement of the golfer's transmitter. The vehicle may be provided with a collapsible control arm which permits manual steering of the vehicle in lieu of the transmitter control.

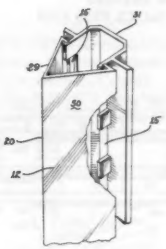
3,812,930
AIR CUSHION VEHICLE CONTROL DEVICE
John B. Chaplin, New Orleans, La., assignor to Textron Inc., Providence, R.I.
Filed May 31, 1972, Ser. No. 258,394
Int. Cl. B60v *1/00*
U.S. Cl. 180—117 **16 Claims**

An improved valve for controlling discharge of fluid from a flexible discharge conduit of a puff-port system employed in air cushion vehicles. The valve is formed of a flexible material and normally inflated by fluid pressure within the discharge conduit to lie in fluid sealing engagement with its inner surface. Actuation of the valve is effected by deflating same, such



as for instance by use of a tension cable. Deactivation or reinflation of the valve may be assisted by s spring device associated with the valve.

3,812,931
SOUND BARRIER
John B. Hauskins, Jr., Phoenix, Ariz., assignor to Engineering Corporation of America, Phoenix, Ariz.
Filed Oct. 24, 1972, Ser. No. 300,108
Int. Cl. F01n *1/10*
U.S. Cl. 181—33 E **5 Claims**

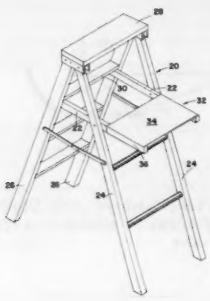


A sound barrier is disclosed for attenuating noise emanating from a traffic area such as a freeway. The barrier borders the traffic area and incorporates a plurality of spaced-apart Helmholtz chambers, each comprising an elongated chamber having openings therein. The chambers may be of triangular cross section with an edge formed by the apex of the triangular cross section facing toward the traffic area. The openings are positioned in the sides of the triangular chambers; the chambers are positioned so that opposing sides of adjacent chambers form inverse-acting acoustic horns focusing the sound energy from the traffic area toward the openings. The openings also act as side-branch filters to assist in the attenuation of the noise.

3,812,932
REMOVABLE LADDER APRON CONSTRUCTION
Richard E. Davis, 1863 Beaumont Rd., Columbus, Ohio 43224
Filed June 19, 1973, Ser. No. 371,403
Int. Cl. E06c *7/14*
U.S. Cl. 182—126 **6 Claims**

A removably mounted apron for a collapsible type wooden ladder adapted to slideably receive the supporting bars of a

conventional apron in moderate frictional gripping relationship. The removable apron includes sidewalls provided with a



gradual taper which defines the limit of inward travel of the apron upon the supporting bars and which provide the means for frictional gripping of the support arms.

3,812,933

ENERGY STORING DRIVE MEANS

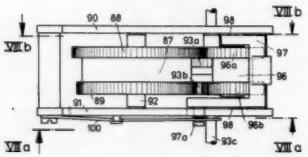
Helmut Darda, Im Tal, 7712 Blumberg, Germany

Filed Apr. 20, 1971, Ser. No. 135,662

Claims priority, application Germany, Apr. 21, 1970, 2019085; Aug. 7, 1970, 2039265

Int. Cl. F03g 1/00

U.S. Cl. 185—37 **38 Claims**



A first component in a drive is rotatable in one and in an opposite direction. A second component, such as a shaft, is rotatable also, and is connected with energy storing means which stores energy when the second component rotates. A transmission is provided which connects the first and second components to rotate the second when the first rotates. The transmission has a first branch provided with a first device which transmits motion from the first component to the second component only when the first component rotates in one direction but will not transmit such motion when this first component rotates in the opposite direction, and there is further provided in the transmission a second branch having a second device which transmits motion to the second component only when the first component rotates in the opposite direction but will not transmit motion when the first component rotates in the first direction.

3,812,934

RAILWAY SKATE CAR RETARDER

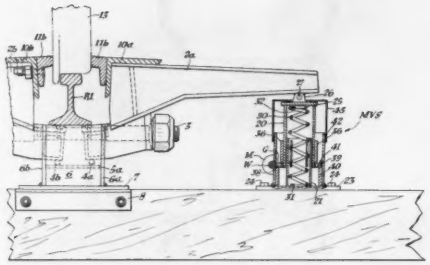
Peter M. Noble, Valencia, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.

Filed Jan. 2, 1973, Ser. No. 320,311

Int. Cl. B61k 7/06

U.S. Cl. 188—62 **10 Claims**

This invention relates to a weight proportional skate car retarder including a plurality of levers pivotally supported on the cross ties and disposed on the respective sides of a track rail. The pivotal levers carry elongated braking elements which are disposed parallel to the track rails and are operable to apply brake pressure to both sides of the rims of the car wheels. Each of the outer levers of the car retarder is normally biased and held in an upper braking position. Each outer lever is rigidly held in its upper braking position by a movable support



having an electromechanical locking apparatus which includes a motor operated latching unit. The release of the latching unit allows the movable support to move which causes the outer levers to collapse under the weight of a car, and thereby causes the braking elements to move the car retarder to its lower nonbraking position.

3,812,935

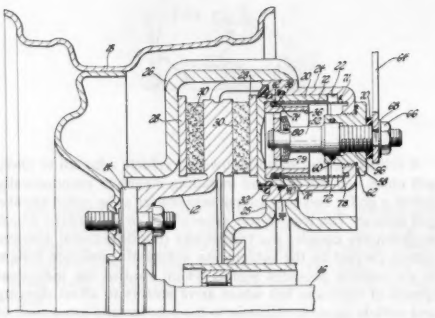
DISC BRAKE WEAR TAKE UP DEVICE

William L. Pringle, Grosse Pointe Shores, Mich., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Jan. 15, 1973, Ser. No. 323,569

Int. Cl. F16d 65/54

U.S. Cl. 188—71.8 **18 Claims**



A wear take-up device for a disc brake assembly comprising: friction means for frictionally engaging a rotor, and movable actuator means; the actuator means including first means for engaging the friction means when the actuator means moves in a first direction and second means for disengaging the first means from the friction means when the actuator means moves in a second direction wherein movement in the first direction is toward frictional engagement. The first means comprises wedge means including ramp members and a circumferentially expandable ring member, the ring member being adapted to ride on said ramp members. The second means comprises disabler means having a plurality of arm members for engaging the ring member and proving the same out of engagement with the friction means.

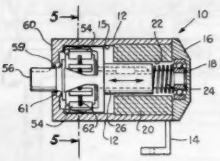
ERRATUM

For Class 188—106 see:
Patent No. 3,812,750

3,812,936
SPRAG SOLENOID BRAKE

Dan H. Dane, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 14, 1973, Ser. No. 359,958
Int. Cl. B60t *13/04*; F16d *65/34*
U.S. Cl. 188—171 **6 Claims**



An electrically operated brake, including a housing having a cylindrical chamber provided therein. A rotary member is carried within the cylindrical chamber for rotation about a longitudinal axis of the cylindrical chamber. Circumferentially spaced sockets are disposed in the outer surface of the rotary member for accommodating one end of sprags. Spring means urge the sprags in contact with an inner surface of the housing for locking said rotary member relative to said housing. A control member is adapted to be shifted longitudinally by an electrically operated means for forcing the sprags out of engagement with the housing. A spring forces the control member to return to its braking position when the electrically operated means is de-energized.

3,812,937
DAMPING MEDIA FOR ENERGY ABSORBING DEVICES

William J. Abbott, and Malcolm Rankin, both of Bradford, Pa., assignors to Witco Chemical Corporation, New York, N.Y.

Filed Oct. 4, 1972, Ser. No. 295,026
Int. Cl. F16f *9/30*; C09k *3/00*
U.S. Cl. 188—266 **8 Claims**

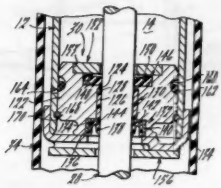
In a hydraulic liquid energy absorbing device for use in low impact bumpers for vehicles, a hydraulic gelled liquid (damping media) comprising a low viscosity petroleum oil, having dispersed therein up to about 20 percent of a modified organophylic montmorillonite (Bentone), and sufficient dispersant such as methanol; said damping media having an unworked penetration of about 225–300 at 77°F. It can contain a small amount of a dispersed polymer such as polybutene, polyisobutene, polybutadiene, polyisoprene, polystyrene, and rubber latex, and the like.

3,812,938
SHOCK ABSORBER

John H. Fader; Johan H. Keijzer, both of Hasselt; Marcel J. R. Graulus, and Roland H. C. Beets, both of St. Truiden, all of Belgium, assignors to Monrol Belgium N.V., St. Truiden, Belgium

Division of Ser. No. 45,867, June 12, 1970, abandoned. This application Mar. 30, 1972, Ser. No. 239,813
Int. Cl. F16f *9/36*
U.S. Cl. 188—322 **8 Claims**

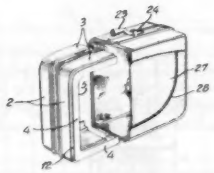
A shock absorber comprising an elongated cylindrical pressure cylinder having a piston reciprocally disposed therewithin and connected to a piston rod extending outwardly from one end thereof, the piston rod carrying a dirt shield which extends coaxially of the pressure cylinder and in partial surrounding relationship therewith. The pressure cylinder is adapted to be filled with preselected quantities of a hydraulic damping fluid and a pressurized gas for damping reciprocal movement of the piston therewithin. The piston is provided with a novel valve arrangement which controls the compression and rebound characteristics of the shock absorber, and one end of the pressure cylinder is provided with a novel rod guide assembly which is designed so as to provide for convenient charging of the cylinder with the aforesaid pressurized gas. The interior of the pressure cylinder is provided with a generally helically shaped baffle arrangement which is compressible axially within the cylinder in response to reciprocal movement of the piston therein and functions to prevent undesirable foaming or aeration of the hydraulic fluid during operation of the shock absorber.



3,812,939
SOFT SIDED HAND LUGGAGE

Simon Pelletier, Levis, Quebec, Canada, assignor to Dionite Luggage Inc., Levis, Quebec, Canada

Filed Dec. 12, 1972, Ser. No. 314,321
Claims priority, application Canada, May 31, 1972, 143800
Int. Cl. A45c *5/04*
U.S. Cl. 190—49 **6 Claims**



There is disclosed a construction of soft sided traveling case distinguished by the simplicity and ease with which it can be assembled; the construction comprises two shells which are permanently connected, the bottom of each shell having a large window and each shell being lined externally by a covering of flexible cloth or other material which is stretched over and covers the window.

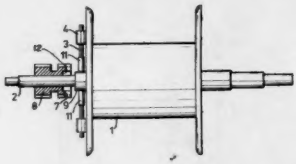
3,812,940
COUPLING DEVICE FOR FISHING REELS

Hugo Ragnvald Svensson, Svangsta, Sweden, assignor to ABU Aktiebolag, Svangsta, Sweden

Filed Nov. 2, 1972, Ser. No. 303,218
Claims priority, application Sweden, Nov. 2, 1971, 13973/71
Int. Cl. F16d *13/76*; A01k *89/02*
U.S. Cl. 192—17 **2 Claims**

This invention relates to a coupling device for fishing reels in which a gear pinion forming a part of the drive mechanism for the spool is displaceable axially on the spool shaft for

coupling and disengaging the drive mechanism and the spool. In such devices it is known to provide centrifugal brake blocks slidably mounted on a diametral pin fixed onto the spool shaft and displaceable under centrifugal action against a circular braking drum, the one end of the pinion being formed into one part of a claw coupling engageable by a diametral coupling



member formed by opposed flattened portions on the shaft. According to the invention the end of the pinion turned towards the spool has an inner bore capable of sliding over the portion of the shaft supporting the guide pin for the brake blocks and a transverse diametral slot for direct engagement with the guide pin.

3,812,941

POWER TRANSMITTING AND ZERO POSITION RESTORING DEVICE

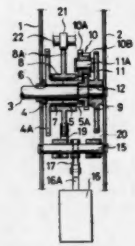
Nobuyuki Yanagawa, Kanagawa, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Division of Ser. No. 170,745, Aug. 1, 1971, Pat. No. 3,764,129. This application Dec. 11, 1972, Ser. No. 313,872

Claims priority, application Japan, Aug. 17, 1970, 45-71431

Int. Cl. F16d *71/00, 13/08*

U.S. Cl. 192—26 **7 Claims**



A power transmitting and zero position restoring device for use with a copy sheet feeding apparatus including a magazine with a displaceable bottom plate on which copy sheets are stacked; a rack and pinion arrangement for elevating the bottom plate so that the top sheet of the stack is brought into contact with and removed by a feed roller; an output shaft for operating the elevating pinions; a spring clutch system for communicating a power drive with the output shaft; and a gear system between the spring clutch system and the output shaft for maintaining the bottom plate in the elevated position, when the spring clutch system is disengaged in response to the copy sheet contact with the feed roller, by preventing reverse rotation of the output shaft for a predetermined period.

3,812,942

HYDRAULIC SYSTEM

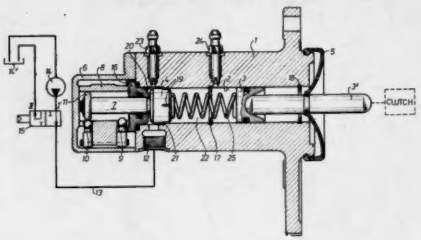
Helmut Espenschied, Ludwigsburg, and Herbert Weyer, Stuttgart, both of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed June 12, 1972, Ser. No. 261,938

Claims priority, application Germany, June 12, 1971, 2129292

Int. Cl. F16d *13/14*

U.S. Cl. 192—91 R **6 Claims**



A hydraulic system for operating a friction clutch has a cylinder, in an internal passage of which a first piston is displaceable between a rest position and a working position against the action of a biasing element associated with the friction clutch, which action tends to move the first piston to its rest position. A second piston is also displaceable in the passage in the same sense as the first piston between a starting position and an operated position and defines with the first piston at all times a chamber. Pressure fluid is accommodated in this chamber at all times and the chamber communicates with a non-pressurized space via suitable passage means when the second piston is in its starting position.

3,812,943

CAM OPERATED FRICTION CLUTCH

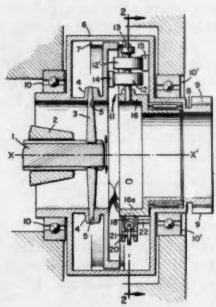
Philippe Quemerais, Billancourt, France, assignor to Regie Nationale Des Usines Renault, Billancourt (Hauts de Seine) and Automobiles Peugeot, Paris, both of, France

Filed Dec. 27, 1971, Ser. No. 211,955

Claims priority, application France, Jan. 12, 1971, 71.00805

Int. Cl. F16d *25/063*

U.S. Cl. 192—93 A **1 Claim**



Friction-type variable-speed transmission mechanism comprising internally tangent disk and rings, and more particularly at least one disk rigid with the input shaft and interposed between two friction rings rotatably solid with a driven drum, one of said rings being adapted to be moved in its axial

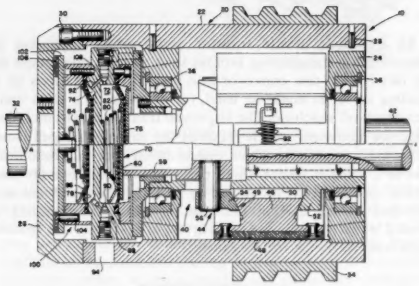
direction under the control of a thrust device carrying reaction members distributed around a circumference external to the contact area between said disks and rings, characterized in that said thrust device comprises a plate carrying at least one shaft on which radially spaced rotary rollers are disposed and adapted rotatably to engage cam faces positioned on said movable ring and in said rotary drum, respectively, said plate being positioned angularly under the combined action of two antagonistic forces.

3,812,944

CENTRIFUGAL CLUTCH

Kiritkumar R. Patel, Cleveland, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Filed June 29, 1972, Ser. No. 267,332
Int. Cl. F16d *43/06*
U.S. Cl. 192—105 B **20 Claims**



A delayed-action centrifugal clutch having a controlled deceleration mechanism for frictionally engaging the driven member to the driving member of the clutch during deceleration or stoppage of the driving member. The clutch is of the type requiring axial movement of a cammed locking member against the time-adjustable bias of a fluid displacing dashpot before radial engagement of the clutch may be obtained. The fluid in the dashpot is displaced, against a bias, from a first chamber to a second chamber whereat the displaced fluid acts against a reaction member to frictionally engage the driven portion of the clutch to the driving portion of the clutch. A variable restriction is provided in the passageway leading from the second chamber to the first chamber, and thus, upon deceleration of the driving member of the clutch, the displaced fluid is retained against the bias for a selectively variable given period of time in the second chamber whereat the displaced fluid acts against the reaction member to frictionally engage the driving member to the driven member.

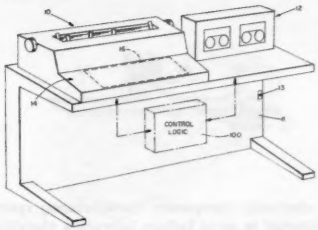
3,812,945

TYPEWRITER SYSTEM

Harold Stanley Koplow, Peabody; Fritz Eberle, Lowell; Shu-Kuang Ho, Chelmsford, and Edward Lesnick, Carlisle, all of Mass., assignors to Wang Laboratories, Inc., Tewksbury, Mass.

Filed Oct. 18, 1972, Ser. No. 298,664
Int. Cl. B41j *5/30*
U.S. Cl. 197—19 **12 Claims**

An editing typewriter system having a typewriter, two magnetic tape cassettes and control logic. Representative of its operational features are its ability to learn a format including margins and tabs, line spacing and number of lines per page, as well as its ability automatically to indent and automatically to tabulate by aligning the decimal points of a column of numbers. During recording, it can be operated to center headings, insert memos, pre-hyphenate, underline and combine symbols. Corrections can be made while recording simply by backspacing and striking over without retyping the remainder of the line, or the entire line can be erased if desired. After recording, it has the ability to search and index to a desired line solely by reference to the initial symbols of that line, after which the system can be operated to print out that line in



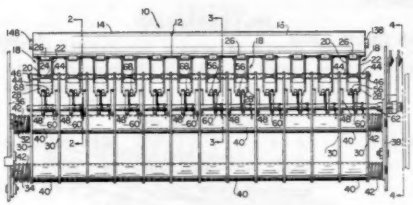
whole or part for revision by inserting or deleting as required. Transfer can be accomplished directly from cassette to cassette for editing so that it is unnecessary to print anything except the revisions. During playback, the right margin may be changed, adjusted within a variable space adjust zone and even justified.

3,812,946

PROGRAMMABLE PLATEN COMPRESSION ROLLS

Joseph J. Terbay, Dayton, and Richard P. Taylor, Xenia, both of Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed Jan. 22, 1973, Ser. No. 325,844
Int. Cl. B41j *15/18*
U.S. Cl. 197—129 **6 Claims**



Individually programmable compression rolls for an accounting machine having a rotatable platen which is split into first and second parts, with the rolls being spaced along the platen. Each roll is rotatably mounted on a roll arm which is pivotally mounted on a supporting shaft having a spring thereon to resiliently urge the associated roll against the platen. Each roll arm has first and second actuating arms associated therewith, with the first arm being fixed to rotate with a first actuating shaft but being axially slidable thereon between first and second positions, and with the second arm being fixed to rotate with a second actuating shaft but being axially slidable thereon between first and second positions. In the first position, each actuating arm is out of contact with its associated roll arm, and when selectively axially moved to the second position, the actuating arm is aligned with the associated roll arm enabling the associated actuating shaft (when rotated) to pivot the roll arm and move the associated compression roll away from the platen. Separate actuating linkage is provided for the first and second actuating shafts.

3,812,947

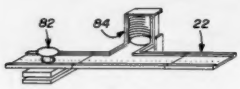
AUTOMATIC SLICE PROCESSING

James L. Nygaard, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 845,733, July 29, 1969. This application Aug. 14, 1972, Ser. No. 280,317

Int. Cl. B23q 5/22; B65g 47/24

U.S. Cl. 198—19 2 Claims



In an electronic component manufacturing system, slices are transported in serial fashion between a plurality of work stations. As the slices move through the system, each work station performs a separate manufacturing operation on each slice. The manufacturing operations are performed in immediate succession and within the same time interval so that the slices are processed rapidly and so that slices do not accumulate between the work stations. The slices are maintained in sequence throughout the system so that the operation of the system is more easily controlled.

3,812,948

DEVICE FOR SEPARATING AND CONVEYING OF ARTICLES, FOR EXAMPLE, CHOCOLATE BARS

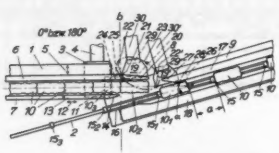
Pierre Luginbuhl, Neuhausen am Rheinfall, Switzerland, assignor to Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed May 1, 1972, Ser. No. 249,680

Claims priority, application Switzerland, May 17, 1971, 7284/71

Int. Cl. B65g 47/00

U.S. Cl. 198—20 R 5 Claims



A device for separating and conveying articles, such as chocolate bars, which are moved in engagement with each other by an input conveyor and are transferred by a periodically operating transfer member onto an output conveyor which operates in synchronism with said transfer member which engages the articles during their conveying movement and moves the same with a speed which is greater than the speed of the output conveyor. The transfer member comprises a pusher which is moved along a closed elliptical path which is arranged in a plane which is vertical to a plane containing the axis of the path of the input conveyor and thereby transfers the articles from the path of the input conveyor to the path of the output conveyor in such manner that the articles will be in spaced relation to each other on said output conveyor. Preferably, the input and output conveyors are arranged at a slight angle with respect to each other.

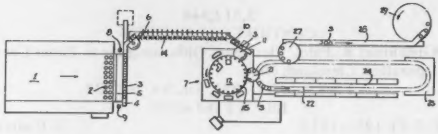
3,812,949

CRACK-OFF APPARATUS FOR GLASS ARTICLES

John S. Lush, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio

Division of Ser. No. 882,969, Dec. 8, 1969, Pat. No. 3,650,724. This application Dec. 23, 1971, Ser. No. 211,471

U.S. Cl. 198—21 5 Claims



An improved article transfer and feeding apparatus is described for transferring articles such as glass containers or the like from a row conveyor into spaced work stations on a rotating turret as might be used, for example, in a glass tumbler crack-off machine. The improved transfer means includes a narrow conveyor which receives the rows of articles from the row conveyor and which intermittently carries these articles to a transfer wheel which passes them onto a single line article spacing conveyor including spacing wheels. Means are provided at the exit in the spacing conveyor including a second transfer wheel for moving the articles into the spaced work stations on the rotating turret.

3,812,950

METHOD OF TRANSPORTING CIGARETTES OR THE LIKE

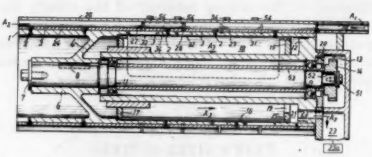
Willy Rudszinat, Dassendorf, and Dieter Ludszeweit, Hamburg, both of Germany, assignors to Hauni-Werke Korber & Co. KG., Hamburg-Bergedorf, Germany

Division of Ser. No. 744,995, July 15, 1968, Pat. No. 3,535,003. This application June 16, 1970, Ser. No. 46,623

Claims priority, application England, July 21, 1967, 33791/67

Int. Cl. B65g 29/00, 47/30

U.S. Cl. 198—31 AA 3 Claims



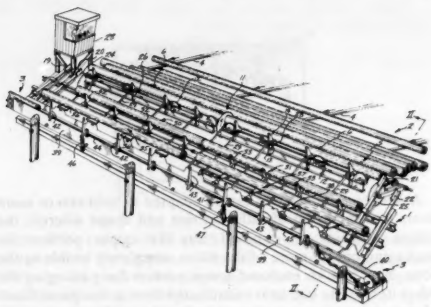
Cigarettes which are discharged lengthwise from the cutoff of a rod cigarette machine are fed into successive flutes of a revolving drum and are arrested and located in predetermined axial positions by forces produced by two or more streams of compressed air and/or suction air. The resultant of forces acting upon a cigarette in predetermined position is zero. A stationary shroud seals from the atmosphere the outer sides of those flutes which receive cigarettes from the cutoff and while the cigarettes in such flutes are acted upon to assume predetermined positions. Each cigarette can be biased against the adjoining surface of the respective flute by atmospheric air which is admitted through openings provided in the shroud.

3,812,951

LOG HANDLING APPARATUS

Altan Vanstone Fullaway, Aberdeen, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed May 16, 1972, Ser. No. 253,747
Int. Cl. B65g 47/26
U.S. Cl. 198—34 6 Claims



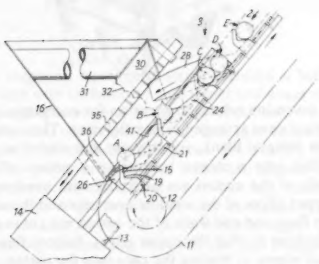
A bucking and log handling apparatus has a bucking station where log stems are cut to at least one desirable length. Positioned transversely from the bucking station are at least two axially spaced holding stations with means associated with one holding station to move the log segment axially. The holding stations provide temporary support for the log segments until they are called for downstream at which point the holding function is removed and the log segments fall into the outflow conveyor system. A reject mechanism allows any undesirable log segment to be removed from the system.

3,812,952

ARTICLE CONVEYING APPARATUS

Alan Jones, and John Shaw Bustard, both of Westhoughton, near Bolton, England, assignors to Les Parson & Sons (Engineers) Limited, Burry Port, South Wales, Great Britain

Filed Jan. 30, 1973, Ser. No. 328,027
Int. Cl. B65g 47/18
U.S. Cl. 198—57 7 Claims



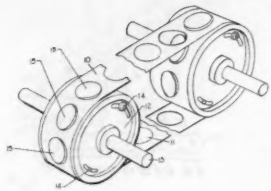
The invention provides an apparatus for feeding onions and other articles from a hopper and two eccentrically mounted rotating rollers between which the articles fall on to two rails along which the onions travel upwardly, the rails being of diminishing height at their upper ends so as to lower the required articles into recesses on a conveyer, while excess onions are lowered on to inverted V-shaped blocks from which they fall into channels that convey them back to the hopper.

3,812,953

DRIVING OR IDLER DRUM FOR ARTICLE FEEDING BELT

Marvin Walter Maschke, Sidney, Ohio, assignor to The Stolle Corporation, Sidney, Ohio

Continuation-in-part of Ser. No. 85,087, Oct. 29, 1970, abandoned. This application Apr. 21, 1972, Ser. No. 246,362
Int. Cl. B65g 15/00
U.S. Cl. 198—131 9 Claims



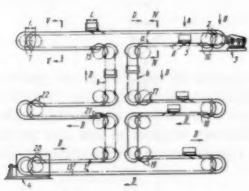
A driving drum or an idler drum for use with an article feeding belt for intermittently feeding a series of articles along a path so as to present them in succession to a plurality of operating stations where operations are performed on said articles in sequence. The belt is of non-stretch character and has a series of equally spaced article-receiving apertures of a shape to seat said articles. The drum carries on its periphery a series of plugs of a thickness at least equal to the belt thickness. The plugs are configured to fit snugly in the belt apertures when the belt is in a curved condition as it passes around the drum; and the leading and trailing edges of the plugs are profiled to enter and leave the belt apertures without interference. The plugs are secured in recessed flats on the drum periphery, the flats being of a size to accommodate the largest plugs for use with belts having apertures of a size to carry the largest of the articles to be treated. The plugs are easily replaced by smaller plugs for use with belts arranged to carry smaller articles.

3,812,954

CAR CONVEYER

Vladislav Mikhailovich Kaletin, ul. Kirova, 60, kv. 80, and Anatoly Afonasievich Morokin, ul. Kirova, 60, kv. 72, both of Kurgan, U.S.S.R.

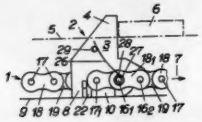
Filed Aug. 16, 1972, Ser. No. 281,011
Int. Cl. B41j 13/02
U.S. Cl. 198—138 4 Claims



A car conveyer wherein two-axle cars are arranged adjacent to each other on the horizontal sections of the track, for which purpose one axle of each car is pivotably connected through a rod to the right-hand driving chain, and the other axle — to the left-hand driving chain. Each roller mounted on the axle between the car and the rod moves on the guide located along the track.

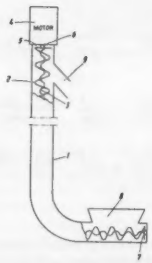
On the curved section of the track corresponding to the outer side of the sprocket engaged with the chain, the guide is constructed in such a way that it enables the cars to pass freely on that section.

3,812,955
PUSHER DEVICE FOR ATTACHMENT TO A CHAIN CONVEYOR
Georg Kopp, Neuhausen Am Rheinfall, Switzerland, assignor to SIG Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland
Filed Jan. 15, 1973, Ser. No. 323,910
Claims priority, application Switzerland, Jan. 25, 1972, 1086/72
Int. Cl. B65g 19/26
U.S. Cl. 198—170 7 Claims



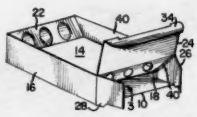
A pusher device adapted to be pivotally attached to a chain conveyor to travel, with it, between a conveying path and a support path, and to move into and out of engagement with objects on the conveying path in dependence on the contour of the support path. Each device has a tooth with object and support path engaging portions and this tooth is pivotally mounted on a pin protruding from a side of the chain, by a separate chain element.

3,812,956
SCREW CONVEYOR
Erich A. Hindermann, Bockumer Str. 99a, Dusseldorf-Wittlaer, Germany
Continuation of Ser. No. 888,349, Dec. 29, 1969, abandoned. This application Feb. 10, 1972, Ser. No. 225,326
Claims priority, application Germany, July 29, 1969, 1938370
Int. Cl. B65g 33/00
U.S. Cl. 198—213 5 Claims



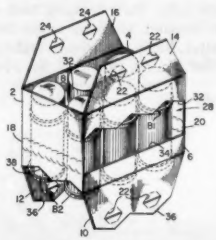
A worm conveyor in which two conveying helices are mounted inside each other in a flexible tube. Both helices have a pitch in the same sense, and both rotate in the same direction. Preferably the pitch of the inner helix is about 10 percent greater than that of the outer helix and it also rotates somewhat faster. When starting, the inner helix is preferably started first, then the outer helix and apparatus for doing this are included.

3,812,957
MULTI-PRODUCT CARTON
Hampton E. Forbes, Jr., Wilmington, Del., assignor to Westvaco Corporation, New York, N.Y.
Division of Ser. No. 136,917, April 23, 1971, Pat. No. 3,744,650. This application Nov. 30, 1972, Ser. No. 310,761
Int. Cl. B65d 5/50
U.S. Cl. 206—45.14 4 Claims



A dual compartmented carton adapted to hold two or more items that might be of different size and shape wherein the carton contains an exposed tray-like upper portion for packaging one or more of the items completely visible to the consumer, and an enclosed lower portion for packaging the other items. The carton is constructed from a one-piece blank of material such as paperboard or the like so that the two portions are isolated from one another by a carton partition element or panel.

3,812,958
CARTON FOR PLURALITY OF CONTAINERS
Rolf A. Samsing, Braintree, Mass., assignor to The Gillette Company, Boston, Mass.
Continuation of Ser. No. 85,437, Oct. 30, 1970, abandoned. This application Sept. 21, 1972, Ser. No. 290,941
Int. Cl. B65d 25/54, 75/08
U.S. Cl. 206—45.31 14 Claims

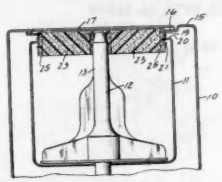


The invention relates to a carton for carrying a plurality of cylindrical cans arranged in parallel rows. The carton is made from an integral blank, suitably cut and scored so that it can be folded into a sleeve to receive a group of cans. The sidewalls of the carton are provided with window openings. The upper edges of the window openings and the edges of the bottom flaps and end walls of the carton are cut in a zig-zag or wave fashion so that the upper edges, bottom flap edges and end wall edges, in loading the cans into the carton, slide down over the beads of the cans without interference.

3,812,959
PACKING BRACE FOR WASHING MACHINES
Francis P. Brennan, 1057 Rolling Dr., Lisle, Ill. 60532
Filed Oct. 2, 1972, Ser. No. 294,025
Int. Cl. B65d 85/06
U.S. Cl. 206—320 5 Claims

Packing brace for automatic washing machines, bracing the agitator, spin basket and casing of the machine from movement relative to each other when moving the machine from

one location to another. The brace is made from two or more blocks of resilient plastic material of a length slightly greater than the distance from the rim of the casing and the spin basket to the center post of the agitator and of a depth to contact the rim of the casing, the spin basket and center posts of agitators of varying heights. The blocks are each internally relieved along one or more ends thereof to increase the resiliency thereof and the ease in locating a block in position between



the rim of the casing of the machine and rim of the spin basket and agitator of the machine. The relief is attained by a series of holes in the block extending transversely thereof in the region of the rim of the casing and rim of the spin basket, or by a single hole extending vertically through the block. The holes may be at each end of the block to make the blocks symmetrical so they will always be in their bracing positions regardless of which end of the block is placed in engagement with the rim of the casing and rim of the spin basket.

3,812,960

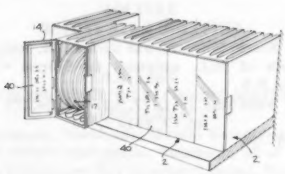
BOX FOR TAPE REELS

Thomas S. Falletta, Smithtown, and Paul Jones Pugliese, Peekskill, both of N.Y., assignors to Harcourt Brace Jovanovich, Inc., New York, N.Y.

Filed Apr. 14, 1971, Ser. No. 133,998

Int. Cl. B65d *85/67*; **B65h** *55/00*

U.S. Cl. 206—387 F **15 Claims**



A box for magnetic tape reels, which includes a hollow housing provided with vertically spaced upper and lower walls with an opening between them at one end of the box. Sets of rib pairs are provided within the housing, with each rib pair including an upper rib extending along and downwardly from the upper wall and a lower rib spaced below and aligned with the upper rib, connected to the lower wall. The tape reels are slid into the interior of the housing, so that each tape reel is mounted between one of the rib pairs with the upper and lower ribs entering and passing between the reel flanges to locate the reel within the box.

3,812,961

SCREW PACKAGE

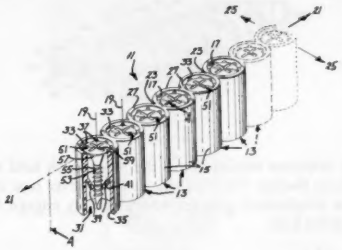
Jim I. Merrick, Alda, Nebr.; Carl J. Carlson, Jr., Minnetonka, Minn., and Donald W. Carlson, Omaha, Nebr., assignors to Triad Fastener Corp., Alda, Nebr.

Filed Apr. 24, 1972, Ser. No. 247,187

Int. Cl. B65d *83/02, 85/24, 85/62*

U.S. Cl. 206—338 **4 Claims**

A screw package is disclosed for consecutively feeding screws into a driving position with respect to an automatic driver. The screw package includes a string tubular members sized so as to accept a screw within each member. Each of the tubular members has a plurality of axially extending elongated strips attached to the inside surface of the member. Each of the strips extends downwardly from near the top of the tubular member and terminates in a resilient finger extending downwardly and radially inwardly. When the screws are in-



serted within the tubular member the strips will axially guide the head of the screw and the fingers will axially guide the screw shank, and when the screw is screwed downwardly within each tubular member the fingers will flex radially outwardly to axially guide the head. In this manner the screw package prevents the screw from going askew during the drilling operation.

3,812,962

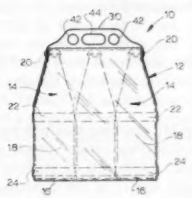
CONTAINER PACKAGE

Ernest R. Cunningham, Libertyville, Ill., assignor to Grip-Pak Inc., St. Louis, Mo.

Filed Mar. 31, 1972, Ser. No. 240,039

Int. Cl. B65d *75/00*

U.S. Cl. 206—427 **5 Claims**



A container package for a plurality of containers is disclosed which includes a one-piece multi-packaging device having a stretch mounted wrap-around skirt for engaging the containers, a covering top, and an integral upstanding multiple-thickness handle for transporting the containers.

3,812,963

DISPENSING PACKAGE FOR ELONGATED BODIES

Emery J. Zahuranec, Solon; Alfred Bedo, Walton Hills, and Ross E. Barth, Euclid, all of Ohio, assignors to Crawford Fitting Company, Solon, Ohio

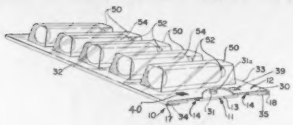
Filed Apr. 1, 1969, Ser. No. 811,735

Int. Cl. B65d *73/00*

U.S. Cl. 206—468 **6 Claims**

A dispensing package for relatively small elongated bodies such as arbor mounted tube fitting ferrules and including a rectangularly shaped base of relatively rigid but resilient material and a clear cover of plastic or the like. The base has suitable locking indentations or apertures along the front and

rear edges to interact with complementary downwardly protruding stops on the cover, thus to limit relative movement of the cover and base. The plastic cover has elongated, transversely disposed blisters above the base which hold and display items therein. The side edges of the cover turn inwardly to form longitudinal grooves which slidably engage the side edges of the base.

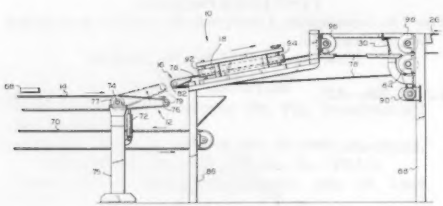


3,812,964

VENEER SORTER AND STACKER

Curtis H. Woodruff, Eugene, Oreg., assignor to Cabax Mills, Eugene, Oreg.

Filed June 27, 1973, Ser. No. 374,095
Int. Cl. B07c
U.S. Cl. 209—73 **18 Claims**



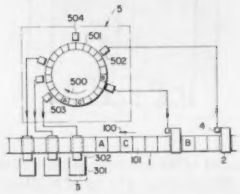
A veneer sorting and stacking machine includes photoelectric apparatus for detecting veneer sheets of greater than a preselected minimum width and an endless belt tipple which elevates to transport sheets of the minimum width into the machine. Moisture detecting means determine if individual sheets are wet or dry. An overhead ribbed belt frictionally engages the top sides of the veneer sheets and transports them along the machine on a pair of guide rails faced with low friction polymer material. Depending on the moisture determination, a given sheet is transported to a selected stacking station where rotatable gates divert it into one of a pair of bins at the station. Each stacking station includes a stacking hoist including pairs of hoist arms disposed in each bin and interconnected by chains for vertical movement with respect to a support. The chains operate to insure that as the hoist arms lower in one bin, those in the other bin are raised. The hoists are gravity operated solely by the weight of the veneer sheets stacked thereon and each hoist includes an air brake for selectively adjusting movement thereof. Electrical circuitry is provided to select the appropriate gate according to the moisture characteristic detected by the moisture detecting apparatus. Such circuitry further reverses the operation of the stacking hoists at each stacking station as a given bin is filled and causes the appropriate gate to close the the gate at the other bin correspondingly to open. Means are also provided automatically to remove the stack of sheets as soon as a bin is filled.

3,812,965

METHOD FOR AUTOMATICALLY SORTING BLOCK-TYPE OBJECTS OF DIFFERENT CATEGORIES AND APPARATUS THEREFOR

Yutaka Kurata, Iwata, and Motoji Iwata, Hamamatsu, both of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed Mar. 21, 1972, Ser. No. 236,755
Claims priority, application Japan, Mar. 25, 1971, 46-16841; Mar. 25, 1971, 46-16840
Int. Cl. B07c *3/02*
U.S. Cl. 209—74 M **11 Claims**



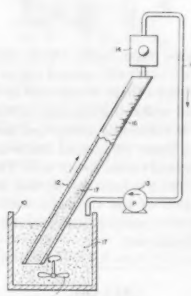
A lumber or like objects sorting apparatus is arranged to be operative so that at the time block-type objects of various different categories are loaded, at different sites, on a single main conveyor in succession without the objects being superposed one upon another, the information of both the categories of the objects to be sorted and the positions at which the objects were loaded on the main conveyor is registered in a memorizer, and that, as the objects are carried along on this conveyor, they are unloaded — at the signal coming from the memorizer — off the main conveyor when these objects arrive at their respective designated positions of removal for the respective categories. Thus, it is possible to automatically deliver the sorted objects at their designated positions of removal, i.e., onto the designated classified individual receptacles.

3,812,966

SETTLING RATE TESTER

William A. Beach, Milltown, and Richard M. Schlauch, Yardville, both of N.J., assignors to Sybron Corporation, Rochester, N.Y.

Filed Mar. 13, 1972, Ser. No. 234,277
Int. Cl. B01d *37/04*
U.S. Cl. 210—70 **6 Claims**



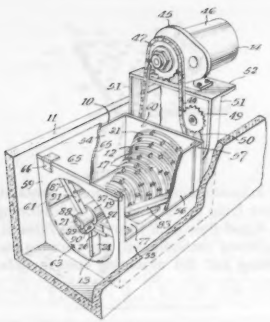
The settling rate of particulate matter in a fluid is determined by passing a mixture of the fluid and the particulate matter through an inclined tube at a known flow rate within the laminar flow range. Sensors may be used to detect the presence of particles at one or more levels in the tube; and the signals from the sensors may be used to control the operation of a separator.

3,812,967

SCREENING AND COMMINUTING DEVICE

Stanley P. Rudzinski, 1156 S. Lombard Ave., Oak Park, Ill. 60304

Filed Feb. 5, 1973, Ser. No. 329,585
Int. Cl. C02c 1/22
U.S. Cl. 210—174 18 Claims



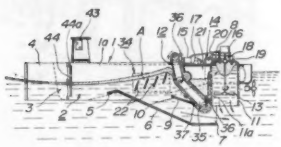
A device for comminuting and screening solids in a stream of fluid material having a conical rotary screen on which cutters are mounted for coaction with stationary cutters and which is formed for circular elements of sequentially increasing diameter and spacing therebetween supported on an axle by precut ribs and on which cam locks hold cutting elements at preset angles to the direction of rotation, the screen being driven at its largest diameter be a flexible belt and supported at both ends in a flow directing enclosure for unitary installation in a flow channel.

3,812,968

DEVICE FOR RECOVERING FLOATING MATTER FROM WATER SURFACE

Kuninori Aramaki, Yokohama; Hiroshi Kawakami, Kamakura, and Yasuharu Kawaguchi, Yokohama, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed June 6, 1973, Ser. No. 367,617
Claims priority, application Japan, June 10, 1972, 47-57321; July 26, 1972, 47-74799
Int. Cl. B01d 35/02
U.S. Cl. 210—242 7 Claims



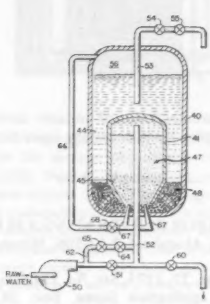
A ship-like device for recovering pollutant from water surface by forcing the pollutant-carrying water into a downwardly-directed bucket, so that the pollutant floats on calm water surface defined therein and a suction means collects the pollutant therefrom. A whirl-generator may be disposed within the bucket.

3,812,969

APPARATUS FOR FLUID TREATMENT

William J. Maroney, Williston Park, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed Oct. 16, 1972, Ser. No. 297,602
Int. Cl. B01d 23/16
U.S. Cl. 210—274 7 Claims



Apparatus for treating fluid in which the fluid is passed through a bed of solid particles, such as filter media or ion exchange resins, is provided with improved means for supporting the bed and improved means for backwashing the bed. The apparatus includes an outer vessel having a closed bottom and an inner vessel having an open bottom. The inner vessel is positioned above the bottom of the outer vessel. Thus, there is an opening between the inner vessel and the bottom of the outer vessel. The bed of solid particles is supported by the bottom of the outer vessel and extends up into at least one of the vessels. The bed covers the opening between the inner vessel and the bottom of the outer vessel. An inlet conduit admits fluid to one of the vessels and the fluid passes down through the bed and through the opening into the other vessel. Since the bed is supported by the outer vessel, expensive support paraphernalia such as underdrains and strainers are not required. Preferably, at least one of the vessels has a closed top, and an outlet conduit communicates with this vessel at an intermediate level. Thus, fluid accumulates in the vessel with the closed top and a pocket of air is trapped above the accumulated fluid. The outlet conduit includes means for restricting the flow of fluid from the vessel so that the trapped air is compressed. The bed is backwashed by reducing pressure on the inlet side of the bed, whereby the compressed air forces the accumulated fluid back through the bed and through a backwash outlet conduit communicating with the other vessel above the bed. During the backwash cycle, air may be withdrawn from the pocket of compressed air and injected into the bed, so that a mixture of air and fluid will pass through the bed and scour the particles.

3,812,970

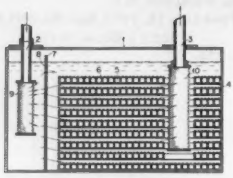
SEPARATING APPARATUS

Masahiko Yamazaki, 2164-19, Fujitsukaya, Shinohara-cho, Kohoku-ku, Yokohama, Japan

Filed Nov. 2, 1972, Ser. No. 303,111
Claims priority, application Japan, Dec. 28, 1971, 46-2991
Int. Cl. B01d 23/00
U.S. Cl. 210—316 5 Claims

A settler type separating apparatus comprises a tank for holding liquid having inlet and outlet ports; a plurality of horizontally disposed particle-receiving trays superposed parallel on each other at prescribed intervals, each having a

plurality of cavities formed on the upper side; and a screen stretched over the upper open side of the cavities of the tray,



wherein impure particles trapped in said cavities are obstructed from escaping by a boundary layer formed by the screen.

3,812,971

APPARATUS FOR DEHYDRATING A SLURRY

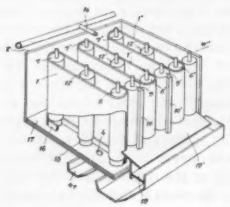
Samuro Yamamoto, Akasaka 6-2-13-506, Minato-ku, Tokyo, Japan

Filed Dec. 27, 1971, Ser. No. 211,930

Claims priority, application Japan, Dec. 28, 1970, 45-120085; Dec. 29, 1970, 45-120775; Sept. 6, 1971, 46-68676

Int. Cl. B01d *33/04*

U.S. Cl. 210—327 **2 Claims**



An apparatus for concentration of dilute solid-liquid slurry by passing through a filter-squeeze out vessel which comprises units formed of a vertical endless-filter belt stretched upon a pair of driving rolls extending across the vessel, these units of the endless-filter belt and driving rolls being set in parallel in the vessel with a definite space in between, the endless-filter belts rotating continuously or periodically; filtering the slurry and the draining filtrate from inside of the filter media to the outside of the vessel. Squeezing rolls and driving rolls are set so as to be tightly contacted to form a separating wall on the open side of the vessel. The layer of solids upon the filter surface are squeezed out, and scraped to the outside of the separating wall as a squeezed out cake.

To make the device more effective the filter-squeeze out vessel is assembled with a press device comprising primary and secondary perforated cylinders and a press roll which is wrapped with endless-filter sheet and endless-press sheet. Each cylinder and press roll is arranged in the position so as to form a gradually approaching S-shaped-path, wherein the squeezed out cake is induced and pressed out to obtain the highly concentrated cake in one process step.

3,812,972

LIQUID FILTER AND METHOD FOR FABRICATING SAME

Jesse Rosenblum, 112 Roosevelt St., Closter, N.J.

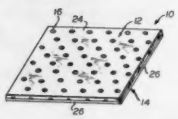
Filed May 2, 1972, Ser. No. 249,711

Int. Cl. B01d *25/18*

U.S. Cl. 210—489 **12 Claims**

A liquid filter including at least two filter members having continuously contacting opposing surfaces, the members each being fabricated of a non-porous material, wherein at least a segment of a liquid flow path through the filter is defined at the interface of the contacting surfaces.

A method of manufacturing the above filter comprising the steps of forming a groove in at least one of the opposing surfaces of the filter members and then mounting the filter mem-



bers together in continuous superimposed contacting relation with the groove lying at the interface and defining at least a segment of a liquid flow path through the filter at said interface. In a preferred embodiment, the forming step includes chemical etching and the mounting step includes diffusion bonding.

3,812,973

COMPOSITION OF MATTER FOR CONTROLLING OIL POLLUTION AND PREFERABLY OIL DISCHARGE IN WATER

Leif Einar Stern, Malmo, Sweden, assignor to Kritbruksbolaget I Malmo AB, Malmo, Sweden

Filed Mar. 22, 1972, Ser. No. 236,964

Claims priority, application Sweden, Apr. 6, 1971, 4441/71

Int. Cl. E02b *15/04*

U.S. Cl. 210—502 **4 Claims**

A fibrous composition of matter for controlling oil pollution and preferably oil discharges in water comprises fibers which consist of a mixture of paraffin and polyethylene in a preferred ratio of from about 50:50 to about 60:40 and which have been obtained from a molten mixture of paraffin and polyethylene.

3,812,974

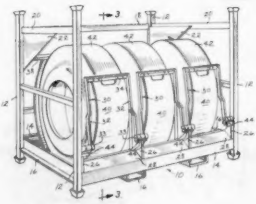
GREEN TIRE SUPPORT

Rowland L. Sylvester, 718 S. Chapin St., South Bend, Ind. 46621

Filed Oct. 6, 1972, Ser. No. 295,702

Int. Cl. A47f *7/04*

U.S. Cl. 221—23 **8 Claims**



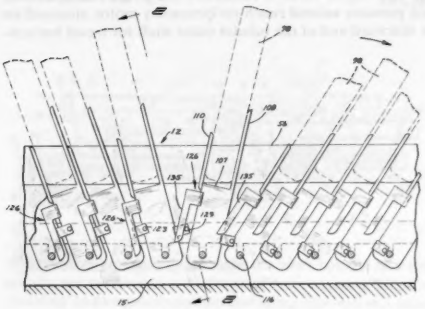
A green tire support which includes a flexible web supported by and having a longitudinal dimension exceeding the spacing between carrier parts. One of the carrier parts includes a pivoted lever which is shiftable between a first position in which the web is formed into a generally U-shaped tire supporting sling and a second position in which the web is formed into a generally L-shaped configuration.

3,812,975

INTER-ACTUATING RECORD HOLDING STRUCTURE

Julian Gutierrez, 6233 Brookview Ave. S., Minneapolis, Minn. 55424

Continuation of Ser. No. 212,053, Dec. 27, 1971. This application Mar. 26, 1973, Ser. No. 344,841
Int. Cl. A47b 81/06
U.S. Cl. 211—40 1 Claim



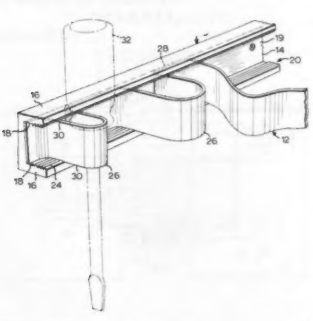
A phonograph record holding apparatus comprising a multiplicity of pivotal record holding members with said members having inter-actuating portions comprising a rearward projecting pair of hooks of one of said holding members egaging a pair of forwardly projected pins of the adjacent holding member rearwardly thereof, said holding members being pivotally balanced whereby the forward tilt of the first of said holding members beyond its dead center point will cause the automatic forward successive tilting of the remainder of said holding members.

3,812,976

RACK

Robert Henry Rempel, Taylor Rd., Bracebridge, Ontario, Canada

Filed Oct. 13, 1972, Ser. No. 297,289
Int. Cl. A47b 81/00; A47f 7/00
U.S. Cl. 211—60 T 8 Claims



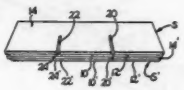
A rack for holding tools or similar objects, which comprises a channel and a transversely flexible ribbon. The flanges of the channel carry a pair of opposed ridges and the ribbon, formed into one or more open loops, is pressed into the channel against the back with each loop wedged between the ridges and projecting from the channel.

3,812,977

STORAGE ASSEMBLY

Terrence A. Glassman, 402 Hapgood, Boulder, Colo.

Filed Apr. 22, 1971, Ser. No. 136,485
Int. Cl. A47f 5/10
U.S. Cl. 211—177 8 Claims



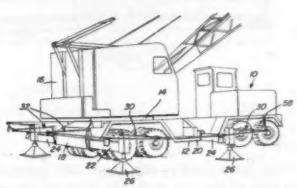
A knock-down storage assembly providing compartmentalized space for the storage and display of a large variety of items, especially books, phonograph records, magazines, newspapers and objects of art. The storage assembly is formed by a pair of collapsible three-sided notched structural elements which interfit with one another. When assembled, the storage assembly can stand in any one of six positions. In addition, two or more storage assemblies may be stacked to form larger storage systems in any of a variety of geometric configurations.

3,812,978

CRANE SAFETY BARRIER

David H. Roland, and Edward D. Hastings, both of Charlotte, N.C., assignors to J. A. Jones Construction Company, Charlotte, N.C.

Filed Nov. 21, 1972, Ser. No. 308,545
Int. Cl. B66c ; E04h 17/00
U.S. Cl. 212—1 10 Claims



A barrier supported from the base of a crane for movement therewith and shiftable between retracted and horizontally outwardly extended position relative to the base of the crane for enclosing an area about the crane base within which the oscillatable superstructure of the crane is swingable, so as to thereby exclude accidental movement of persons into the area about the base of the crane through which portions of the crane superstructure are swingable.

3,812,979

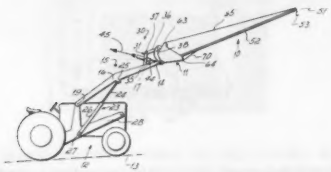
LIFT BOOM FOR A FRONT LOADER TRACTOR

Joseph Q. Leihgeber, Fayetteville, Ohio, assignor to Leihgeber Bucket Booms, Hillsboro, Ohio

Filed Apr. 12, 1973, Ser. No. 350,343
Int. Cl. B66c 23/54
U.S. Cl. 212—35 R 8 Claims

The lift boom is of a generally T-shaped configuration, the stem of the T-boom being provided with a hook to which any suitable load may be attached. The head of the T-boom is seated within a front loader tractor's bucket in the floor/rear wall corner. An upper cable is attached at one end adjacent the hook end of the boom's stem, and is passed over the bucket's top edge and attached at the other end to the bucket.

A lower cable is attached at one end to the boom's stem intermediate the ends thereof, and is passed beneath the bucket's floor and also attached at the other end to the bucket. The lower cable is provided with a turnbuckle assembly. The turnbuckle assembly is adjustable when the boom is seated in the



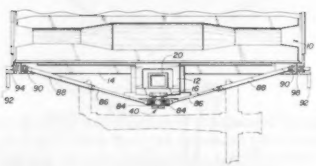
bucket to provide a suitable tension on both the upper and the lower cables, thereby maintaining the T-boom in the initial assembled relation with the bucket no matter what the spatial orientation of the bucket (and, hence, the boom) as set by the tractor, and no matter what the load being carried by the boom.

3,812,980

VALVE MEANS FOR RAILWAY CAR TRAINLINE

John P. Kolb, Stafford, and Richard G. Powell, Houston, both of Tex., assignors to ACF Industries Incorporated, New York, N.Y.

Filed June 1, 1973, Ser. No. 365,887
Int. Cl. B61g 5/06
U.S. Cl. 213—76 6 Claims



A trainline for a railway car has a ball valve structure adjacent the end of the car movable between open and closed positions for controlling the flow of air through the trainline. A ball valve element is mounted within the body of the ball valve structure and is freely floating therein for maintaining a tight seal against the downstream seat when the valve is in closed position. Opposed stems for rotating the ball valve element are mounted on opposed sides of the valve body and extend from the valve body in a generally horizontal direction. An actuating rod is connected to each stem and extends to the adjacent side of the railway car so that the valve may be actuated from either side of the railway car. Actuation of one rod effects simultaneous actuation of the other rod.

3,812,981

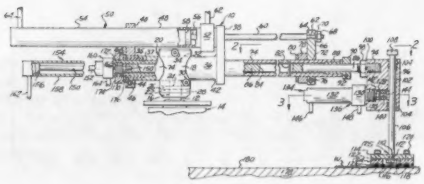
DOUBLE-REACH ATTACHMENT FOR LIFTING AND SWINGING WORK-TRANSFER DEVICE

Donald D. Potter, Waterford, Mich., assignor to Auto-Place, Inc., Troy, Mich.

Filed Aug. 28, 1972, Ser. No. 284,447
Int. Cl. B66c 1/44
U.S. Cl. 214—1 BB 7 Claims

A mounting body containing a socket adapted to be mounted upon the upper end of the vertically-movable and horizontally-rotatable support shaft of a work-transfer device also contains a transverse bore in which is fixedly mounted a horizontal guide sleeve upon the opposite ends of which are mounted parallel supporting brackets for an upper fluid pressure first-reach reciprocatory motor containing a first-reach reciprocable piston with a forwardly-extending upper piston rod. Slidably mounted within the guide sleeve is a tubular outer shaft near the forward end of which is mounted an upwardly-extending cross head connected to the forward end of the upper piston rod.

Slidably mounted within the longitudinal bore of the tubular outer shaft is an inner longitudinally-slotted inner shaft to the rearward end of which is connected the piston rod of a lower fluid pressure second-reach reciprocatory motor mounted on the rearward end of the tubular outer shaft for travel horizontally therewith. The tubular outer shaft near its forward end is provided with a cross-pin with the opposite ends seated therein and with its intermediate portion passing through the longitudinal slot in the inner shaft. Mounted on the forward end of the inner shaft is a head containing a vertical bore in which is freely slidably mounted a workpiece gripper including a vertical rod having a knob on its upper end and a frictional workpiece-grasping pad on its lower end. Also mounted on the head parallel to and below the outer and inner piston rods is a fluid pressure reciprocatory braking motor containing a braking piston, the piston rod of which carries a brake shoe selectively movable into and out of braking engagement with the vertical rod.

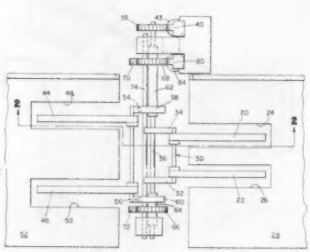


3,812,982

CASE INVERTER

Roger C. Crandlemire, 159 Washington St., Duxbury, Mass. 02332

Filed Jan. 5, 1973, Ser. No. 321,392
Int. Cl. B65g 7/00
U.S. Cl. 214—1 QA 6 Claims



A case inverter has a loading station and a discharging station with parallel sets of case confining arms which are rotated in synchronism from the loading station to the discharging station through an arc of 180° but which are returned through the 180° arc in succession to the case loading station so that the case may be loaded before the arms which confine the loaded case are brought to their overlying position at the loading station.

3,812,983

APPARATUS FOR FEEDING BARS IN AUTOMATIC SINGLE-SPINDLE BAR MACHINES

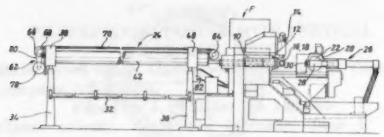
Max Wanner, Esslingen, and Erich Schaefer, Nabern/Teck, both of Germany, assignors to Index-Werke KG Hahn & Tessky, Esslingen, Germany

Filed Aug. 25, 1972, Ser. No. 283,701

Claims priority, application Germany, Sept. 3, 1971, 2144190

Int. Cl. B65h 5/16

U.S. Cl. 214—1.2 14 Claims



Apparatus for feeding bars into the work spindle of a single spindle automatic has a package of bar-receiving tubes surrounding an elongated channel and being received in a tubular holder which is indexible by a fluid-operated ratchet and pawl mechanism to place selected tubes into register with the work spindle. Each tube has an elongated slot and receives a discrete bar pusher having a projection extending through the respective slot and into the channel. The shifting mechanism for the bar pushers has an endless chain one stretch of which extends lengthwise through the channel and carries a U-shaped entraining device which automatically engages the projection of the bar pusher in that tube which registers with the work spindle. The chain can be moved by a reversible electric motor which can be controlled by the programming system of the automatic, the same as the indexing mechanism.

3,812,984

TRANSPORT OF WOODCHIPS

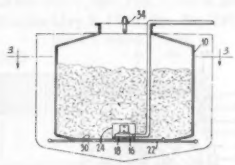
James David Cladingboel, 6 Regent St., Mount Waverly, Victoria, Australia

Filed May 2, 1972, Ser. No. 249,655

Claims priority, application Australia, May 6, 1971, 28597/71; May 31, 1971, 29476/71

Int. Cl. B63g 53/30

U.S. Cl. 214—15 B 7 Claims



The invention resides in a method of loading and unloading woodchips for transport by marine vessels. The woodchip is mixed with water and pumped to the hold into which it is discharged at high velocity to achieve a degree of compaction. Water is separated simultaneously from beneath the cargo and pumped out of the hold. For unloading the cargo is disturbed and remixed with water at hold floor level and then pumped from the ship.

3,812,985

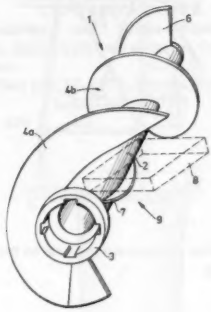
COMPRESSING FEED SCREW

Georg D. Lindeborg, Blomstermala, Sweden, and Desire Heine, Mulhouse, France, assignors to Norba Aktiebolag, Blomstermala, Sweden

Filed Aug. 12, 1971, Ser. No. 171,218

Int. Cl. B65f 3/00

U.S. Cl. 214—83.32 3 Claims



A compressing feed screw, which is particularly intended for feeding in and compressing refuse in a refuse container comprises a tubular shaft and a helical screw blade secured thereto. The screw blade comprises at least two portions which are separated from each other by a gap or an interval.

3,812,986

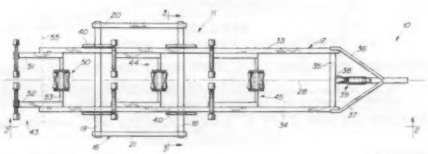
BOAT TRAILER

Richard L. Rogers, Fort Worth, Tex., assignor to Texas Royal Manufacturing Company, Fort Worth, Tex.

Filed Mar. 19, 1973, Ser. No. 342,415

Int. Cl. B60p 3/10

U.S. Cl. 214—84 8 Claims



An open ended cradle type boat trailer in which firm and continuous support is provided to the keel and sides of a boat over an infinite range of boat hull contours during loading, unloading and over-the-road travel. Shock loads imparted to the trailer from over-the-road travel are minimized by a unique multi-part, yieldably connected frame assembly which acts conjointly with the keel and side support structure to minimize and equalize shock loads.

3,812,987

CONTAINER LOADING AND UNLOADING

Minoru Watatani, Tokyo, Japan, assignor to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 28, 1971, Ser. No. 193,276

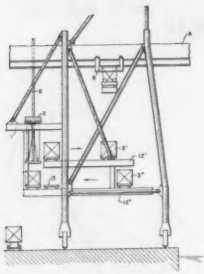
Claims priority, application Japan, Dec. 30, 1970, 45-122322

Int. Cl. B63b 27/00

U.S. Cl. 214—87 1 Claim

A container loading and unloading method in which a buffer is provided between a container crane and a rear con-

veyance facility on a container crane so that some of the containers may be deposited upon said buffer when the containers



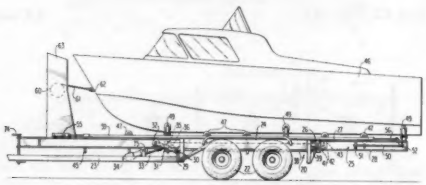
are transferred from the container crane to the container carriage or vice versa.

3,812,988

BOAT TRANSPORTING, LAUNCHING AND RETRIEVING TRAILER

John A. Pyle, Rt. 1, Box 143, Hartly, Del. 19953

Filed Dec. 6, 1972, Ser. No. 312,731
Int. Cl. B60p *3/10*
U.S. Cl. 214—505 18 Claims



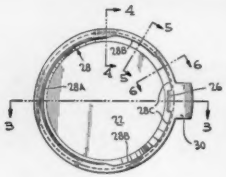
A trailer for transporting, launching and retrieving relatively large boats features a wheeled carriage adapted for coupling to a towing vehicle. A boat supporting bed or frame is both pivotally and longitudinally movably mounted on the wheeled carriage and is tilted and longitudinally extended and retracted relative to the carriage by a pair of fluid pressure operated cylinders which have independent controls. The cylinder which controls the longitudinal extension and retraction of the boat supporting bed pivots with the bed but remains attached to the wheeled carriage and has sliding engagement with support means on the bed so that the cylinder will be properly aligned during the exceptionally long stroke of its piston rod. A third independently controlled cylinder operates boat centering guide arms at the rear of the support bed which are activated during retrieval of the boat from the water. Conveniently located controls for the three cylinders and a boat loading and unloading winch permit an operator to select the correct pivotal and longitudinal movements of the boat supporting bed in conjunction with winch control to meet all variable boat launching and retrieval terrain conditions.

3,812,989

SAFETY CAP

William Horvath, Chatham, N.J., assignor to Diamond International Corporation, New York, N.Y.

Division of Ser. No. 79,192, Oct. 8, 1970, Pat. No. 3,627,160.
This application Oct. 4, 1971, Ser. No. 186,519The portion of the term of this patent subsequent to Dec. 14, 1988, has been disclaimed.
Int. Cl. A61j *1/00*; B65d *55/02*
U.S. Cl. 215—9 7 Claims



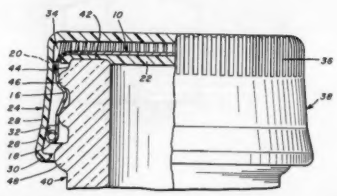
A safety cap of resilient plastic material having a depending skirt within which is formed an annular rib having an anchor portion and a radially inwardly projecting locking lug diametrically opposed to such anchor portion, the rib and the locking portion being of substantial radial extent for positive engagement beneath the locking rib around the container neck to strongly resist removal of the cap. The remainder of the annular rib within the cap skirt is of reduced radial width to function in the manner of a snap rib on the lug side of the skirt. The skirt rib has a continuous annular upwardly presented cam surface for cooperation with the locking rib of the container neck to maintain the end wall of the cap in sealing engagement with the end of the neck. Rotation of the cap to bring the lug into registry with the gap through the locking rib of the container neck permits upward flexing of the lug side of the closure cap and free movement of the lug through the gap, the portions of the skirt rib on either circumferential side of the lug being of sufficiently reduced radial dimension to snap upwardly past the locking lug of the container and during continued removal of the cap to function as pilots for leading the opposite ends of the anchor portion of the container rib upwardly past the locking rib until the cap is removed.

3,812,990

SAFETY CLOSURE ASSEMBLY

Wilburn C. Willis, Hagerstown, Ind., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Aug. 31, 1972, Ser. No. 285,445
Int. Cl. A61j *1/00*; B65d *55/02*
U.S. Cl. 215—9 6 Claims



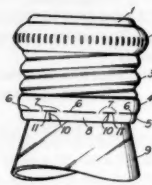
A safety closure assembly is provided which includes an inner cap with threads formed in its skirt for affixation to a container by turning the cap, vertically aligned corrugations in the outer surface of the top portion of the cap skirt and an outwardly projecting bead on the lower edge of the skirt, and further including an outer flexible plastic cap which fits over

the inner cap and which has inwardly projecting, vertically aligned teeth on its inner surface for engagement with the corrugations on the inner cap, an inwardly projecting flange on the bottom edge of the skirt for engagement under the bead on the inner cap to preclude separation of the caps, and an inwardly-upwardly inclined inner surface of the skirt above such flange for engagement against the outer surface of the bead on the inner cap to spring the outer cap upwardly with respect to the inner cap and thereby prevent engagement of the teeth on the outer cap with the corrugation on the inner cap unless substantial downward force is applied against the top of the outer cap.

3,812,991
PILFERPROOF CLOSURE WITH VERTICAL WEAKENING LINES

Wilhelm Wurl, Essen, Germany, assignor to The Coca-Cola Company, Atlanta, Ga.

Filed June 1, 1972, Ser. No. 258,680
Claims priority, application Germany, June 1, 1971, 2127023
Int. Cl. B65d *41/34*
U.S. Cl. 215—252 **5 Claims**

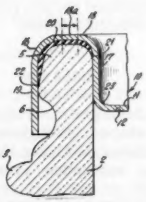


A pilferproof closure for bottles in the form of a thin metal cap with an upper threaded portion engaging the threads of the neck of the bottle and a alower safety ring which engages a counterholding ring provided on the bottle, the lower safety ring connected to the upper threaded portion by bridges separated from one another by peripheral slots and with vertical weakening notches uniformly spqced around the periphery of the lower safety ring. The peripheral slots comprise long and short slots in alternating sequence with the weakening notches being located below the short slots.

3,812,992
INFANT FEEDING PACKAGE

Edward M. Wolf, Cranford, and Stanley J. Koll, Keansburg, both of N.J., assignors to American Flange & Manufacturing Co. Inc., New York, N.Y.

Continuation of Ser. No. 7,780, Feb. 2, 1970, abandoned. This application May 1, 1972, Ser. No. 249,427
Int. Cl. B65d *53/06*
U.S. Cl. 215—253 **5 Claims**



An infant feeding bottle is fitted with a closure seal having a centrally disposed puncture panel recessed within the bottle neck. A nipple and internally threaded retaining member subassembly is placed over the closure seal and threadedly engaged on the bottle neck. The retaining member incorporates puncturing means whereby the seal puncture panel is broken allowing passage of the bottle contents into the nipple upon full tightening of the retaining member down onto the bottle neck.

3,812,993
CONTAINER COVER

Tsuyoshi Yoshioka, and Sumio Nishiyama, both of Sagamihara, Japan, assignors to Daiwa Can Company, Ltd., Tokyo, Japan

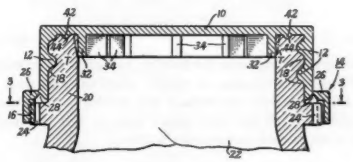
Filed Jan. 17, 1972, Ser. No. 218,428
Int. Cl. B65d *43/02*
U.S. Cl. 215—256 **1 Claim**

A cover for a container is disclosed having an open top with a flanged or beaded portion. It includes a container covering panel having an encircling skirt portion depending from the periphery thereof, and a tab projecting outwardly from said shirt. A score line is marked on the skirt portion such that when it is desired to open the container, the user has only to grasp the container with one hand and pull the tab away from the container along the score line with the other hand without changing the grasping position of the former hand. The circumferential length of the score line may be from about 185° to 240° of the encircling expanse of the skirt.

3,812,994
TAMPER-PROOF CLOSURE CAP

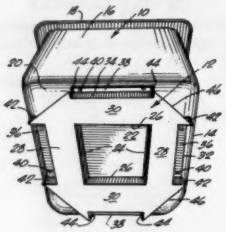
Jerome M. Feldman, Great Neck, N.Y., assignor to Dairy Cap Corporation, Jamaica, N.Y.

Continuation-in-part of Ser. No. 215,562, Jan. 5, 1972, abandoned. This application May 18, 1972, Ser. No. 254,393
Int. Cl. B65d *41/34*
U.S. Cl. 215—256 **11 Claims**



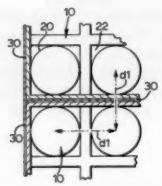
A closure cap for the neck of a bottle or other container, includes a cap body having internal thread means designed to engage external threads on the neck, and a ratchet ring connected to the body by means of a shoulder. A continuous tear line formed at the junction of the body and the shoulder is provided for separating the body and ring, the shoulder and ring being adapted to pivot on the tear line which serves as a hinge to allow the ring to pivot slightly away from the bottle neck while seating the closure on said neck.

3,812,995
COMBINATION CONTAINER AND SKID SUPPORT
Paul E. Lewis, Anaheim, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.
Filed Feb. 28, 1972, Ser. No. 229,793
Int. Cl. B65d *19/04, 19/18*
U.S. Cl. 220—1.5 3 Claims



A vacuum-formed polyethylene container and skid support for forklift handling wherein the skid support has a four-way forklift entry for expeditious handling and has a self-reinforcing configuration which makes it light but rugged.

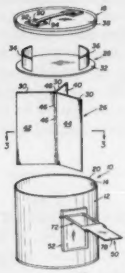
3,812,996
BOTTLE CARRYING CASE
Arthur K. Bunnell, Etobicoke, Ontario, Canada, assignor to Carling O'Keefe Limited, Toronto, Ontario, Canada
Filed June 8, 1972, Ser. No. 260,815
Int. Cl. B65d *1/36*
U.S. Cl. 220—21 4 Claims



Plastic carrying cases for bottles, especially beer bottles, are provided of a structure, in which, when the cases are stacked with bottles therein the tops of the bottles in one case engage the underside of the next upper case so that the load of the stack is supported through the bottles.

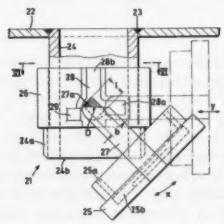
3,812,997
COMBINATION SHIPPING AND COOKING CONTAINER
Violet M. McNally, 14 Fairway Dr., Old Bethpage, N.Y.
Filed Jan. 5, 1972, Ser. No. 215,531
Int. Cl. B65d *25/04, 25/28*
U.S. Cl. 220—22 2 Claims

A container or can for shipping food or the like which is also convertible into a suitable container for cooking the food, said container having a handle that is pivotal from a flush position adjacent the can into a position extending laterally thereof



which facilitates handling and locating the can relative to a fire, stove, etc., as is necessary during cooking service of the can.

3,812,998
INLET AND OUTLET CLOSURE
Erich Amrogowicz, Prenzlauer Bergstrasse 12, Herten Westphalia, Germany
Filed Oct. 19, 1971, Ser. No. 190,571
Claims priority, application Germany, Feb. 23, 1971, 2108538
Int. Cl. B65d *43/16*
U.S. Cl. 220—30.5 2 Claims

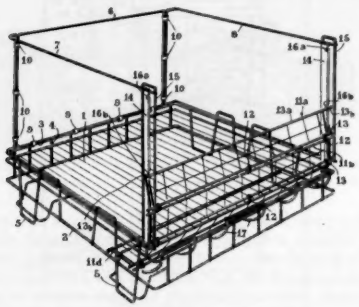


A tubular member, adapted to be a nozzle, is provided in the region of an open end with a closure cap which can be placed over the open end to close it and removed from the open end to expose the same. A connection is established between the closure cap and the tubular member to permit the closure cap to move to a position opening the open end of the tubular member without becoming disconnected from the same. This connection comprises one portion which is axially and rotatably displaceable relative to the tubular member, either in its interior or encircling its exterior, and another portion which is fast with the closure cap and extends from the same to the first-mentioned portion, being either rigid with the same or pivotably connected thereto.

3,812,999
CRATE
Raymond Joseph, Schiltigheim, France, assignor to Ateliers Reunis Societe Anonyme, Schiltigheim (Bas-Rhin), France
Filed June 1, 1971, Ser. No. 148,447
Claims priority, application France, June 11, 1970, 70.21492
Int. Cl. B65d *43/20, 7/20*
U.S. Cl. 220—41 3 Claims

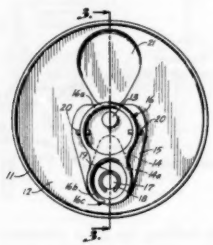
A crate with an openable side has vertically spaced bottoms defining a housing between them. Two vertical runners are

disposed one at each side of a side wall opening of the crate. A plurality of horizontal shutters are each coupled to their neighbours by horizontal pivot means and the ends of all of the shutters are slidable in the respective vertical runners. The plurality of shutters constitute a movable wall capable of clos-



ing the side wall opening, and of sliding in the runners into a retracted position within the housing. The shutters may be retained at partly retracted positions, by engagement of only the top shutter, or of all of the shutters, with retaining means on the vertical runners.

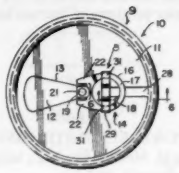
3,813,000
CAN END CONSTRUCTION
Ralph E. Underwood, 8830 S.W. 68th St., Miami, Fla.
Filed Apr. 24, 1972, Ser. No. 246,820
Int. Cl. B65d *17/24*
U.S. Cl. 220—54 **6 Claims**



A can end has a weakened tear strip therein with a plastic retainer affixed thereto. The retainer is swingably affixed to the center of the can and is likewise permanently attached to a pull ring tear strip opener. When the pull ring opener is operated to remove the tear strip from the can end, both the tear strip and the pull ring remain attached to the plastic retainer and are swingable out of the way of the opened can end but are retained on the can end in said out-of-the-way location.

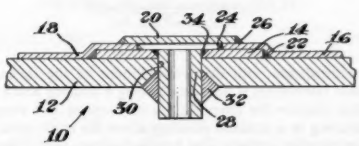
3,813,001
LATCHING ARRANGEMENT FOR RING PULL TAB OF AN EASY OPENING CONTAINER
Gary A. Hougen, Palatine, and Henry F. Kloc, Plainfield, both of Ill., assignors to Continental Can Company Inc., New York, N.Y.
Filed Aug. 31, 1972, Ser. No. 285,287
Int. Cl. B65d *17/20*
U.S. Cl. 220—54 **5 Claims**

An easy opening container having a pull tab in the form of a ring having a finger opening. The pull tab serves to separate the tear portion from an end closure panel upon upward tilting and pulling on the tab. A wing clip fastened to the end panel and having a pair of wings that are vertically spaced from the end closure panel projects through the finger opening and



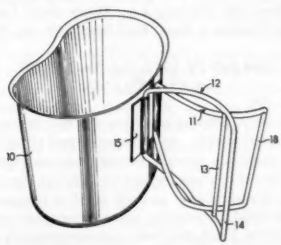
overlies the ring to thereby latch the tab against upward tilting. The tab is movable by turning and twisting to a position free of the wings so that it may be tilted to separate the tear portion from the panel.

3,813,002
WELDED JOINT ASSEMBLY
Peter J. Gurklis, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.
Filed Jan. 10, 1972, Ser. No. 216,393
Int. Cl. B65d *25/14*
U.S. Cl. 220—63 R **2 Claims**



The invention comprises a joint structure for use in providing metal linings in pressure vessels and tanks. Abutting edges of liner material are sealed (welded, usually) to strips on each side of the abutting edges. A closable tap element is sealed to the strip adjacent to the vessel wall and extends through the wall. If a leak occurs along the inner strip seal, fluid is confined to the space between the inner and outer seal strips, isolated from the vessel wall. Leaking fluid is removed via the tap elements which are suitably located along the joint assembly.

3,813,003
FOLDING WIRE HANDLE FOR CUPS
Richard J. Bernazzani, Roslindale, Mass., assignor to The United States of America as Represented by the Secretary of the Army, Washington, D.C.
Filed Apr. 12, 1972, Ser. No. 243,148
Int. Cl. B65d *25/28*
U.S. Cl. 220—94 R **4 Claims**



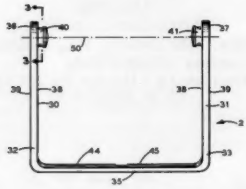
A folding wire handle for a canteen cup or the like comprising two wire loops which may be swung from a stowage posi-

tion closely abutting the sides of the cup to an extended position to form a handle for the cup, one of the loops having an additional wire member extending from the top to the bottom thereof to provide a stop means to limit movement of the loops relative to one another and to form a triangular gripping handle with the outer portions of the two loops.

3,813,004
PORTABLE INSTRUMENT

Joseph R. Andreaggi, Short Hills, N.J., assignor to Weston Instruments, Inc., Newark, N.J.

Filed Sept. 13, 1972, Ser. No. 288,608
Int. Cl. B65d *25/28*
U.S. Cl. 220—96 **13 Claims**



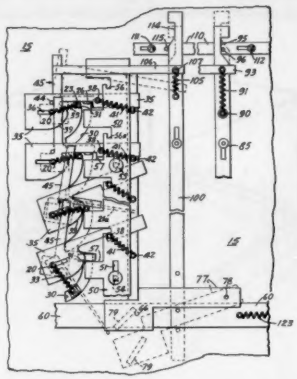
In accordance with one embodiment of the invention, a portable instrument is provided having a housing and a handle coupled thereto for carrying the instrument and supporting the housing in a selected position when the instrument is laid on a supporting surface. The handle has two arms joined by a handle bar at one end thereof and each arm has a deformable journal projecting inwardly adjacent its other end. These journals mount arcuate external projections at their periphery and are rotatively received in two concentric openings in housing side walls defining each opening. Each wall comprises camming lobes separated by arcuate recesses in which the projections of the journals are accommodated to lock the handles in a firm housing-supporting position. When the handle is rotated with respect to the housing, the projections are pressed inwardly by the camming lobes and smap outwardly again when these projections come opposite to a recess to effect locking of the handle.

3,813,005
VENDING MACHINE MODULE

James A. Moe, 503 Carolyn Ln., White Bear Lake, Minn. 55110, and Thomas J. Ross, 1011 Euclid St., St. Paul, Minn. 55119

Filed July 19, 1973, Ser. No. 380,989
Int. Cl. G07f *11/06*
U.S. Cl. 221—90 **10 Claims**

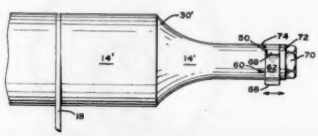
A module for a vending machine wherein two columns of shelves of substantially any conventional height can be operated successively upward through one column and then the other. The shelves are tripped successively by a vertically moving cam member, and as each shelf is tripped the shelf above it is readied for tripping upon subsequent actuation of the cam member. Each shelf has a pivoted support arm which rests on a ledge on the frame. This support arm is dislodged by a follower upon movement of the reciprocating cam member having a plurality of cam surfaces. As the shelf is tripped the follower on the shelf above the tripped shelf is moved to a position for engagement by the subsequent reciprocating of the cam member. A locking bar between parallel reciprocating cam members and a sequencing drive system permits their sequential operation to trip the shelves in one column and then in the next.



3,813,006
REPLACEABLE WELDING TIP FOR VIBRATORY WELDING APPARATUS

Ernest P. Holze, Jr., Brewster, N.Y., and Donald R. Culp, Danbury, Conn., assignors to Branson Instruments, Incorporated, Stamford, Conn.

Filed Feb. 2, 1973, Ser. No. 329,092
Int. Cl. B23k *5/20*
U.S. Cl. 228—1 **11 Claims**



A replaceable welding tip for a vibratory high frequency welding apparatus comprises a sleeve having a plurality of ridges, each ridge including a workpiece engaging surface. The tip is clamp mounted by screw means to an antinodal region of the resonator which provides the vibratory energy to the tip. The axis of vibration of the workpiece engaging surfaces and that of the thread of the screw means are substantially parallel with each other.

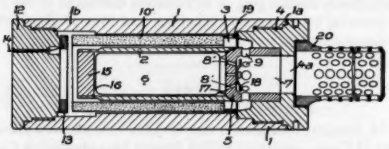
3,813,007
GAS GENERATOR WITH COOLANT EXPULSION MEANS

Bernard Doin, and Bernard Plantif, both of Saint-Medard-en-Jalles, France, assignors to Societe Nationale Des Poudres et Exyslosifs, Paris, France

Filed Dec. 10, 1971, Ser. No. 206,662
Claims priority, application France, Dec. 11, 1970, 70.44837; Dec. 11, 1970, 70.44839
Int. Cl. B01j *7/00*; **F17c** *7/00*
U.S. Cl. 222—4 **13 Claims**

This invention relates to a device comprising a reservoir for containing a liquid, a combustion chamber containing a solid propellant with an ignition device therefor, said chamber and said reservoir comprising a separating wall at least partially

deformable or movable to effect a decrease in volume of the reservoir under the action of the pressure of the gases resulting from combustion of the propellant, for expelling instantaneously the said liquid from the said reservoir, calibrated orifices also being provided to place said reservoir in communication with an output tube. If desired, other calibrated orifices may be provided to link the combustion chamber with the outlet tube. This device may be used for effecting a large release of gases in a very short time, e.g., for filling an expansible bag or cushion used, for example, as a safety device for protecting the passengers of an automobile vehicle.



3,813,008

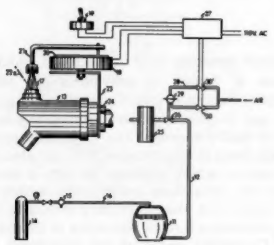
LIQUID DISPENSING APPARATUS

Verne A. Olson, 1924-29th St., S.W., Calgary, Alberta, Canada

Filed Aug. 8, 1969, Ser. No. 848,648The portion of the term of this patent subsequent to May 28, 1990, has been disclaimed.

Int. Cl. B67d *5/08*; **G04c** *23/38*

U.S. Cl. 222—70 **4 Claims**



A draft beer circuit for a series of rapidly intermittent pours, in which a flow pressure control valve is introduced between the beer keg and the spigot, adjacent the spigot, to effectively isolate the downstream portion of the beer circuit below the pressure control valve from the upstream portion, except during conditions of flow. The pressure of the fluid at the spigot is thereby maintained at flow pressure rather than spigot pressure, so that all timed pours are of constant volume.

3,813,009

COMBINATION OPENER AND POURING DEVICE FOR CANS AND THE LIKE

Karl Egon Lenz, Auf der Alm, 5271 Niederrengse, Germany

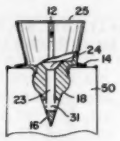
Filed Sept. 30, 1970, Ser. No. 76,770

Claims priority, application Germany, Mar. 28, 1970, 7011612[U]

Int. Cl. B67b *7/26*

U.S. Cl. 222—90 **2 Claims**

A combination opener and pouring device includes a chamber with a spout and pointed stem extending downwardly therefrom for piercing the can top, a flexible collar being provided to seal the chamber against the can edge. The stem includes a bead portion having opposite flat sides for locking the device in the perforation in the can top and a duct system in the stem communicating with the chamber. A cover for the chamber is rotatable therein to seal the chamber when not in use.



3,813,010

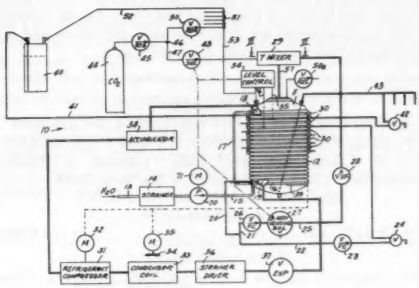
BEVERAGE DISPENSER

Davis A. Hassell, Coon Rapids, and John R. McMillin, Maplewood, both of Minn., assignors to The Cornelius Company, Minneapolis, Mich.

Filed Nov. 27, 1972, Ser. No. 309,947

Int. Cl. B67d *5/56*

U.S. Cl. 222—129.1 **12 Claims**



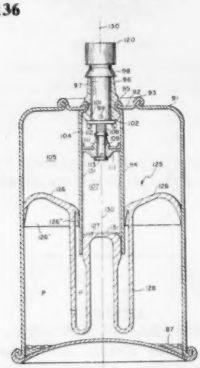
A combined carbonator-dispenser of post-mix beverages includes a storage tank for carbonated water in which a selected pressure of carbon dioxide gas is maintained, and to which still water is added which normally is at line pressure, through a flow control, and to which carbon dioxide gas is added at a still higher pressure. The still water and the carbon dioxide gas are combined in a mixer and the mixture passes through a turbulator enroute to such storage tank. The storage tank is refrigerated by a refrigerant line that encircles the tank in heat-exchange relation therewith, and the water line passes through the bore of the refrigerant line enroute to the mixer. The direction of water flow is counter to that of the refrigerant flow, and a portion of the water line and a portion of the refrigerant line are disposed above the uppermost level of carbonated water. A syrup line encircles the refrigerant line, there being one such syrup line for each flavor to be dispensed. The space above the carbonated water in the storage tank is directly coupled to the space above syrup in the syrup storage tank, so that any tendency for pressure to increase in one of such tanks is absorbed in part by the space above the liquid in the outer tank or tanks.

3,813,011

AEROSOL CAN FOR DISPENSING MATERIALS IN FIXED VOLUMETRIC RATIO

Stanley Harrison, 266A Concord Rd., Bedford 01730, and Jeffrey M. Feldman, 19 Bobolink Rd., Wellesley 02181, both of Mass.

Filed May 11, 1971, Ser. No. 142,330
Int. Cl. B65d *83/14*
U.S. Cl. 222—136 9 Claims



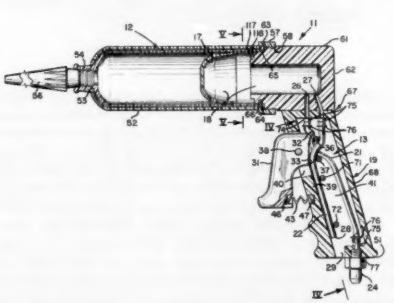
An aerosol can has two concentric compartments that connect to separate valves which in turn lead to a chamber for mixing the materials from the compartments and dispensing the materials mixed. A single unitary piston in the can has different portions which project into or against each of the compartments and a pressurizing fluid in the can drives the piston portions into or against the compartments so that the contents of the compartments are driven through the valves and into the mixing chamber in a fixed volumetric ratio.

3,813,012

AIR POWERED SEALANT DISPENSER, INCLUDING FLEXIBLE TUBULAR CONDUITS AS VALVE MEANS

John E. Laird, Inglewood, Calif., assignor to Products Research & Chemical Corporation, Burbank, Calif.

Filed Mar. 12, 1973, Ser. No. 340,317
Int. Cl. E04f *21/30*
U.S. Cl. 222—326 14 Claims



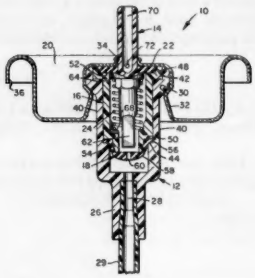
In an air powered gun dispenser for controlled discharge of a flowable sealant material, the dispenser is provided with universal adapters to receive and support various size cylindrical cartridges of the sealant material. These cartridges are of the type having one end formed with a discharge nozzle while the other end is equipped with a dispensing plunger. A supply of pressurized air is received by the dispenser and selectively applied against the cartridge plunger to effect a discharge of the sealant material. To provide manual control over the applied air pressure, a flexible air inlet conduit is arranged to connect the supply of pressurized air to a dispenser chamber communicating with the cartridge plunger. A flexible air exhaust conduit also communicates with such chamber. A manually operable and spring biased trigger actuator provides for selectively discharging or terminating discharge of the sealant material by alternately pinching and thus closing either the inlet or exhaust conduits.

3,813,013

AEROSOL METERING VALVE

Paul M. Kotuby, Naugatuck, and Alvydas Velicka, New Haven, both of Conn., assignors to The Risdon Manufacturing Company, Naugatuck, Conn.

Filed June 27, 1972, Ser. No. 266,656
Int. Cl. B65d *83/00*
U.S. Cl. 222—402.2 7 Claims



An aerosol metering valve is disclosed which features improvements in design to provide lower operating force requirements, facilitate manufacturing changes in metering capacity, and to insure greater consistency in the metered amounts of fluid dispensed. The valve incorporates an apertured elastic boot in combination with a replaceable metering chamber sleeve, which together fit into a standard type of valve body. A valve stem reciprocates within the metering chamber sleeve, and when depressed obturates the aperture in the boot, preventing further admission of fluid to the metering chamber. Continued travel of the stem beyond such point, permitted by elastic extension of the boot, positions a discharge port of the stem within the metering chamber to allow the measured fluid contents thereof to be discharged through the stem to atmosphere. Provision is made in the design of the boot to facilitate its elongation by the stem, and also to minimize the effect of swelling of the elastomer material of the boot on extended exposure of it to the fluid product.

3,813,014

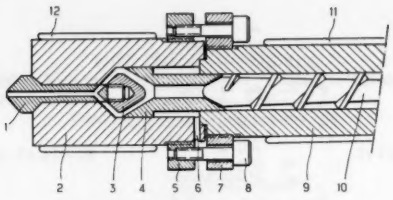
INJECTION MOULDING MACHINE

Daniel L. G. Guerin, Sartrouville, France, assignor to Vincent Rene Leflaive, Paris, France; Guy Peltier, Seine and Marcel Manceau, Paris, all of, France

Filed Feb. 27, 1973, Ser. No. 336,204
Claims priority, application France, Mar. 1, 1972, 72.06982
Int. Cl. G01f *11/22*
U.S. Cl. 222—413 4 Claims

An injection moulding machine of the type incorporating a rotatable and reciprocable screw has on the forward end of the barrel a nozzle portion providing within it a valve cylinder larger than the bore of the barrel. A differential valve plunger having an axial passage extending through it has larger and smaller diameter portions slidably and sealingly engaged in the valve cylinder and the bore of the barrel respectively. The

smaller diameter end of the valve plunger can be abutted by the nose of the screw to form a seal preventing flow through the axial passage in the valve plunger and to enable the valve plunger to be driven along the valve cylinder to eject the softened material forwardly from the valve cylinder. A plug is

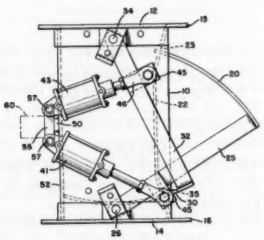


provided which can be operated to open or close off the injection aperture in the valve cylinder. During rotation of the screw softened material passes forwardly through the passage in the valve plunger and by reason of the differential area urges the plunger rearwards towards the screw.

3,813,015
FLOW CONTROL VALVE AND CONTROL SYSTEM THEREFOR

George W. Armstrong, P.O. Box 507, Fairborn, Ohio 45324

Filed Mar. 9, 1973, Ser. No. 339,521
Int. Cl. G01f *11/28*
U.S. Cl. 222—445 **7 Claims**



An air lock or metering flow control valve for flowable bulk material has a symmetric arrangement of blades and piston motors, and includes a curved upper flow control blade and an independent curved lower flow control blade. Separate symmetrically-arranged pairs of piston motors control the movement of each valve blade.

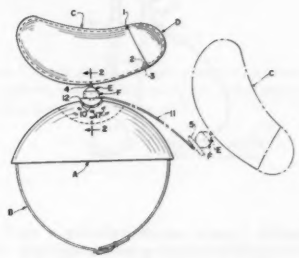
A fluid pressure control circuit is disclosed for operating a pair of movable blades in a conduit by which the upper blade is opened and closed followed by the opening and closing of the lower blade to provide for the controlled flow of a metered amount of material. The control system is responsive to the movement or lack of movement of the blade piston motors rather than to actual positions of the motors, so that the flow control valve cannot be jammed by the stopping of one or the other of the valve blades.

The valve control system includes a pair of flow reversing inlet valves, one for each of the pairs of piston motors operating each blade, to cause the opening and closing movement of the blade. An inlet control valve circuit includes a pair of normally open control valves which are connected to control the inlet valves and which have control end caps connected to respond to an air pressure representing the movement of the other pistons, to prevent shifting of its associated inlet valve as long as the other pistons are either extending or retracting. A four-way valve has its outlet ports connected to the control valves and has its control end caps connected through normally open three-way valves. The three-way valves respond to either of the pairs of piston motors reaching the end of its opening stroke to effect reversal of the application of fluid pressure to the control valves.

3,813,016
CANDY CONTAINER REMOVABLY CONNECTED TO A CHILD'S CAP

Lawson E. Bohannan, 815 Lexington St., Milpitas, Calif. 95035

Filed Feb. 9, 1973, Ser. No. 331,226
Int. Cl. A45f *5/02*
U.S. Cl. 224—5 R **3 Claims**

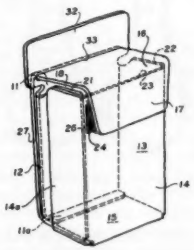


A candy container with a hinged cover, the container being connected to the top of a child's cap by a universal joint that permits the container to be moved into different angular positions with respect to the cap. In addition, the container with its universal joint may be temporarily disconnected from the cap and a cord extends from the universal joint to a spring-biased drum mounted in the cap thus permitting the child while wearing the cap to remove the container with its universal joint from the cap, the cord being unwound from the spring biased roller during this movement so that the child can hold the container in front of him and open the cover for removing candy from the container or adding candy thereto. When this is accomplished, the child can return the container and universal joint to its normal position on the cap, the spring-biased drum winding up the cord.

3,813,017
CAMERA HOLSTER

Joel L. Pimsleur, 2872 Washington St., San Francisco, Calif. 94115

Filed Feb. 22, 1972, Ser. No. 228,203
Int. Cl. A45c *11/38*
U.S. Cl. 224—26 R **2 Claims**



A camera holster is described in which the various panels are formed contiguously from a unitary piece of flexible material. A top cover extends over the top of the holster and a

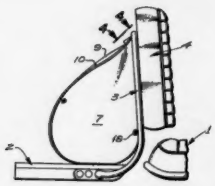
flap foldably extends downwardly from the top cover and releasably attaches to the front panel. Loop means are provided at the back panel for supporting the camera holster on a belt.

3,813,018

COLLAPSIBLE LUGGAGE POUCH FOR MOTORCYCLES

John H. Heltzen, 1435 W. 15th St., Long Beach, Calif. 90813

Filed Feb. 25, 1972, Ser. No. 229,404
Int. Cl. B62j 7/04
U.S. Cl. 224—33 R 5 Claims



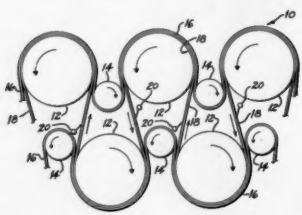
A collapsible luggage pouch including a rigid mounting member arranged for mounting on the back side of the back supporting cushion between the upright bars which support the cushion; a pouch having a closable access opening at its back side and a closure therefor capable of receiving a padlock, the container capable of being extended rearwardly from the seat back to receive luggage such as a motorcyclist's helmet, as well as being folded against the seat back with a portion of the pouch projecting below the seat back; and separable fasteners for securing the container in its folded condition.

3,813,019

WEB STABILIZING DEVICE

Donald McAnespi, Quebec, Canada, and Robert Justin Laliberte, deceased, late of La Salle, Quebec, Canada (by Carolyn Doris Laliberte, executrix), assignors to Midland-Ross Corporation, Cleveland, Ohio

Filed Sept. 8, 1972, Ser. No. 287,528
Claims priority, application Canada, July 24, 1972, 147773
Int. Cl. B65h 17/32
U.S. Cl. 226—97 2 Claims



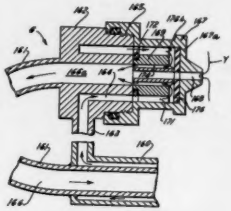
Means is provided for eliminating web flutter which is associated with the conveyance of a free web at high speeds. The means comprises a plate which is spaced relative to the web forming an acute angle therewith. The presence of the plate causes the air carried by the web to be collected in a small region thereby eliminating the turbulence associated with the free movement of the web.

3,813,020

YARN ASPIRATOR

Harry B. Miller, Hopedale, Mass., assignor to Industrie-Werke Karlsruhe Aktiengesellschaft, Karlsruhe, Germany

Filed May 25, 1973, Ser. No. 364,107
Int. Cl. B65h 17/32
U.S. Cl. 226—97 8 Claims



A winder for yarn and the like, having the automatic yarn transfer system of the present invention, includes a drive roll and at least two rotatable chucks each of which is adapted to carry a bobbin tube and is movable into and out of driven engagement with the drive roll. A traversing arrangement traverses a running yarn which is being wound onto one of the chucks, so as to form a yarn package on the latter. A transfer arrangement effects automatic transfer of the running yarn from the one chuck, upon forming of the yarn package thereon, to the other of the chucks. When the yarn package has been formed on the other chuck the running yarn is then automatically transferred again to the first-mentioned chuck.

ERRATUM

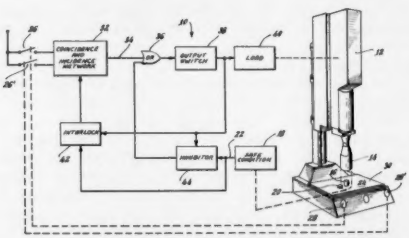
For Class 228—1 see:
Patent No. 3,813,006

3,813,021

ELECTRONIC SAFETY CONTROL CIRCUIT

George C. Kramer, Danbury, Conn., assignor to Branson Instruments, Incorporated, Stamford, Conn.

Filed Nov. 6, 1972, Ser. No. 304,098
Int. Cl. B23k 27/00
U.S. Cl. 228—1 3 Claims



A safety control circuit for operating equipment such as ultrasonic welders and the like is described whereby control is maintained until the equipment operates in a safe condition. A sensor associated with the equipment produces a control signal indicative of the equipment's safe operational condition and is applied to decouple control from initiators used to commence equipment operation. Incidence and coincidence timing networks are employed to require the operator of the

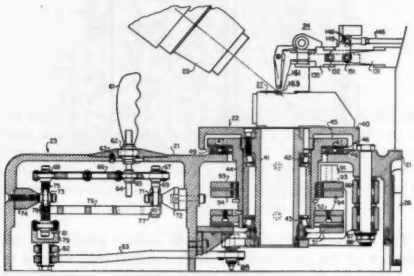
equipment to actuate separate palm switches at the same time to initiate equipment operation after which the switches must remain energized until the equipment has achieved the safe operational condition.

3,813,022

WIRE BONDER APPARATUS

William Radobenko, Scottsdale, Ariz., assignor to Automated Equipment Corporation, Phoenix, Ariz.

Filed June 19, 1972, Ser. No. 264,354
Int. Cl. B23k *21/00*
U.S. Cl. 228—3 **31 Claims**



A wire bonder apparatus for bonding a wire to an electrical element at a plurality of bonding points and looping the wire between the points is provided with a bonding tool, which is mounted on an X-Y stage movable in an X-Y coordinate system. This X-Y stage comprises a compound reed assembly including a top frame supported on a first pair of flexible reeds, the first pair of reeds being supported on a second pair of flexible reeds hung from a base support, and a mounting platform mounted on a third pair of flexible reeds, the third pair of reeds being supported on a fourth pair of flexible reeds hung from the top frame. A bonding tool support arm is mounted on the mounting platform, a swing block being mounted on the end of the support arm by a fifth pair of flexible reeds, the bonding tool being mounted on the swing block by a sixth pair of flexible reeds, and means being provided for moving the bonding tool up and down on the swing block. A sub-base assembly supports the electrical element to which the wire is to be bonded, the sub-base assembly being movably supported, and a micromanipulator assembly being coupled to the sub-base assembly for moving it to initially position the electrical element under the bonding tool.

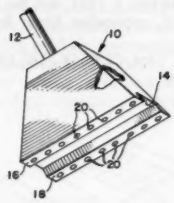
3,813,023

DESOLDERING DEVICE

Didier Henri Clement Auray, 4 Rue Des Tartres, Rueil 92, France; Richard T. Downey, 170 Summer St., Maynard, Mass. 01754, and Robert I. Macomber, 46 Matawanaken Trl., Littleton, Mass. 01460

Filed Dec. 4, 1972, Ser. No. 311,911
Int. Cl. B23k *1/00*
U.S. Cl. 228—19 **10 Claims**

A device for desoldering a plurality of soldered connections on a support member including a heat conductive member provided with a contact surface having one or more openings therein for receiving and simultaneously melting the soldered connections. The contact surface is plated with a material that is non-wettable by solder while the walls of the openings are of a material that is wettable by the solder.

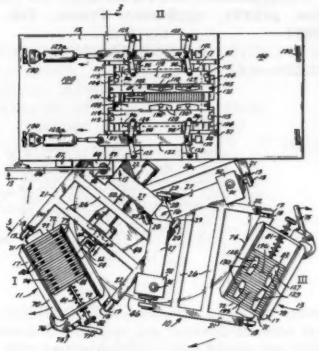


3,813,024

BATTERY ASSEMBLY MACHINE

Walter Carl Kirchberger, Menomonee Falls, Wis., assignor to Globe-Union Inc., Milwaukee, Wis.

Continuation of Ser. No. 192,964, Oct. 27, 1971, abandoned.
This application June 25, 1973, Ser. No. 375,247
Int. Cl. B23k *1/12*
U.S. Cl. 228—58 **11 Claims**

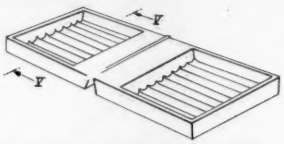


A multistationed battery assembly machine which affords a simultaneous three station operation. At the first station, battery plates and separators are positioned with the lugs extending in an upright position and after initial assembly, the entire unit is rotated to a second station where the unit is raised and the lugs orientated into position by means of comb members. At the burning station, the lugs are melted to form straps and connected to posts whereupon the unit is dropped out of position and moved to a third unloading station. The multistationed assembly machine offers a box assembly at the loading station which can be easily adjusted to receive plates of varying numbers and length. Another unique feature of the box assembly is its pivoting to the assembly machine at opposite corners so as to afford a compound angle which facilitates easy loading.

3,813,025
HINGED CONTAINER

Arieh Solomon, Afeka, Tel Aviv, Israel, assignor to British & Foreign Tobacco Company Limited, London, England

Filed Oct. 1, 1971, Ser. No. 185,510
Claims priority, application Great Britain, Oct. 2, 1970, 46937/70
Int. Cl. B65d *1/00, 5/66*
U.S. Cl. 229—2.5 4 Claims

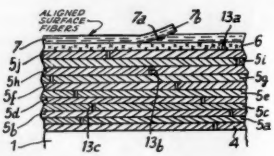


A hinged container which consists essentially of interfitting inner and outer structural components which are coupled together by a hinge line, one of the components being formed so as to accommodate the container content. The invention also relates to methods of forming the constituent components and their assembly to form the container. Essentially the invention relates to a method for the simultaneous assembly of the container and its filling.

3,813,026
ACCURATELY DIMENSIONED SMOOTH-SURFACED MULTI-LAYER CARDBOARD TUBES AND METHOD OF AND APPARATUS FOR MAKING THE SAME

Joseph Biancamaria, Ivry sur Seine, France, assignor to Lhomme (Societe Anonyme), Paris, France

Division of Ser. No. 797,487, Feb. 7, 1969, Pat. No. 3,580,146. This application Mar. 11, 1971, Ser. No. 123,392
Claims priority, application France, Feb. 7, 1968, 68.139051
Int. Cl. B65d *3/04*
U.S. Cl. 229—4.5 7 Claims



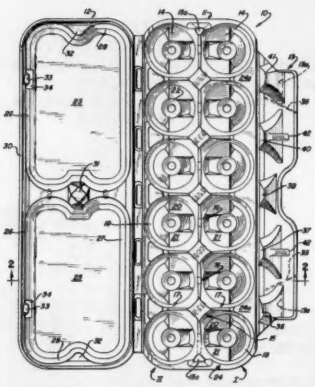
In order to obtain helically wound multi-layer cardboard tubes of accurate diameter and very smooth external surface, the tubes are coated with a thermo-setting resin and forced through the bore of a heated jacket to cause (1) curing of the resin and (2) reduction of the tube diameter to the precise desired dimensions. This reduction is taken up by a radially compressible layer of the tube.

3,813,027
CARTON CONSTRUCTION

Theodore H. Misdom, Jr., Lansing, Ill., and James W. Boyd, Crown Point, Ind., assignors to Packaging Corporation of America, Evanston, Ill.

Filed Oct. 26, 1972, Ser. No. 300,916
Int. Cl. B65d *43/10*
U.S. Cl. 229—45 9 Claims

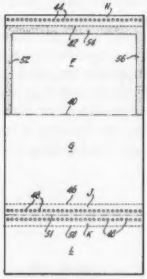
A carton of unitary construction is provided which is adapted to accommodate a plurality of fragile articles such as eggs or the like. The carton includes a tray section with a plurality of cells formed therein. The cells are of like configuration and are arranged in at least two parallel rows. The rows are separated from one another by a plurality of aligned, longitudinally spaced, upwardly extending hollow posts. Each cell has a substantially frusto-conical wall surface interrupted by a pair of annularly spaced segments which are inwardly offset towards the vertical axis of the cell. Each segment has a broad curved surface which is engaged by the accommodated article. The segment surfaces cooperate with a portion of the remainder of the substantially frusto-conical wall surface to provide at least three-point contact with the accommodated article. Each cell is also provided with a raised base portion having a concave central area which is adapted to be engaged by the lower end portion of the accommodated article. The raised base portion is substantially delimited by a depending rib.



3,813,028
CONTINUOUS WEB WITH SEPARABLE SEGMENTED ENVELOPES AND ORDER COUPONS

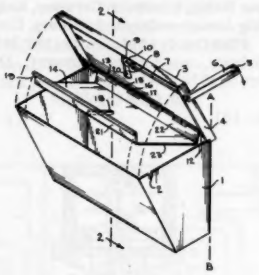
Craig P. Greason, Lloyd Ln., R.F.D. No. 3, Huntington, N.Y. 11743

Filed Sept. 15, 1969, Ser. No. 857,694
Int. Cl. B65d *27/00*
U.S. Cl. 229—70 4 Claims



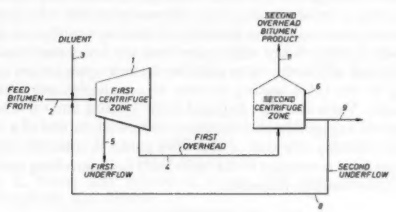
A combination envelope and detachable paper card or coupon in which the paper panels constituting the unit are contiguous, scored, folded and gummed in such a manner that the card may be detached from the unit and the remainder of the panels folded to form an envelope for receiving the card. The entire unit is provided with a line of register holes so that the same may be driven by sprockets at high speed to the paper web of a rotary press for insertion into a publication.

3,813,029
MAIL BOX
Charles R. Ostrom, 5628 Dolores, Houston, Tex. 77027
Filed May 31, 1973, Ser. No. 365,527
Int. Cl. A47g 29/12
U.S. Cl. 232—17 10 Claims



A mail box with mail pick up flag that must be in the up or "pick up" position when there is mail in the letter tray and which will tend to be in the down or "no mail for pick up" position when the letter tray is empty. The letter tray is automatically maintained out of the way when the cover of the box is opened and there is no mail for pick up.

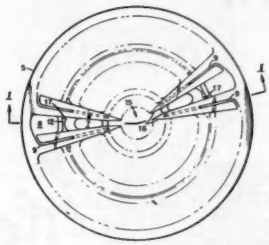
3,813,030
METHOD FOR TAR SANDS BITUMEN FROTH TREATMENT
Daniel J. Curtin, Richardson, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.
Filed May 24, 1973, Ser. No. 363,403
Int. Cl. B04b 11/02
U.S. Cl. 233—18 3 Claims



A method for treating tar sands bitumen froth wherein the froth is centrifuged in a first zone to separate coarse mineral particles therefrom, the froth is then treated in a second centrifuge zone to separate fine mineral particles therefrom, and at least part of the fine mineral particle underflow from the second centrifuge zone is treated in the first centrifuge zone to remove additional bitumen associated with the fine mineral particles, and at least part of the thus treated fine mineral particles are removed from the first centrifuge zone along with the coarse mineral particles.

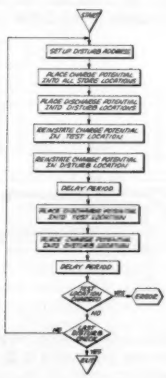
3,813,031
ROTOR HAVING SAMPLE HOLDING MEANS
Norman G. Anderson, Oak Ridge, Tenn., assignor to the United States of America as represented by the United States Atomic Energy Commission
Filed Aug. 2, 1972, Ser. No. 277,192
Int. Cl. B04b 9/12
U.S. Cl. 233—26 4 Claims

A fast photometric analyzer of the multistation, rotary type is provided which is suitable for performing sample and reagent division, mixing, sedimentation, washing, transfer, and light absorbancy functions. Two sets of cavities are disposed in concentric annular arrays within a disk adapted to rotate about its central axis. The radially outer set of cavities constitutes a rotary system of cuvettes suitable for photometric measurements. Cavities in the radially inner set of cavities, herein designated loading cavities, communicate, on a one-to-one basis, with respective cuvette cavities. A sloping barrier is provided between each loading cavity and corresponding cuvette to allow for centrifugal transfer of fluids from the loading



cavity to the cuvette upon rotation of the disk while preventing such transfer or return of fluids under static conditions. An opening is provided through each barrier to enhance mixing in the cuvettes. A vacuum activated drainline extends radially inward from a point adjacent the radial extremity of each cuvette to a vacuum source for removing overlaying liquid from the cuvettes. A central receiving and distribution chamber bordered by segmentation serrations is in fluid communication with each loading cavity to facilitate dynamic or static loading of those cavities.

3,813,032
METHOD FOR TESTING MOS MEMORY STORE DEVICE
James L. King, Phoenix, Ariz., assignor to Honeywell Information Systems, Inc., Waltham, Mass.
Filed July 30, 1973, Ser. No. 383,930
Int. Cl. G11c 29/00; G06f 11/04
U.S. Cl. 235—153 AC 10 Claims



A method for testing a memory store comprised of metal-oxide semiconductor (MOS) devices by selecting a cell address most likely to affect or disturb a test cell of the MOS memory store. All storage cells are set to a charged condition. The test and disturb cells are charged with opposite charges and then toggled with reversed charges after a period of time.

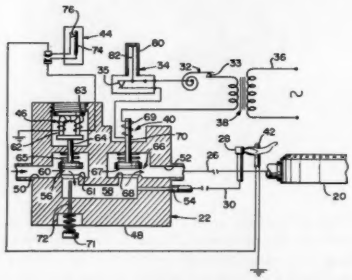
After another period of time, the test cells are then checked for an error condition, a charge picked up by migrating electrons. The procedure may be exercised by a computer program.

3,813,033

HEATING CONTROL SYSTEM

Michael J. Caparone, Arcadia, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Nov. 2, 1972, Ser. No. 303,182
Int. Cl. F23q 9/14; F23n 5/10
U.S. Cl. 236—9 R **7 Claims**



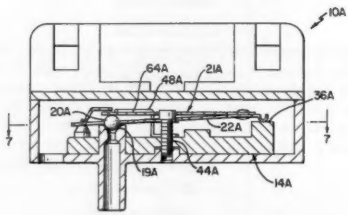
A heating control system including a control device for supplying fuel to burner apparatus and having a pilot safety valve which is closed in response to flame outage at the burner apparatus or a furnace plenum chamber temperature in excess of an abnormal limit temperature, the pilot safety valve not being automatically reopened when the plenum chamber temperature decreases below the abnormal limit temperature to thereby prevent recycling of the heating control system.

3,813,034

TEMPERATURE RESPONSIVE DEVICE AND METHOD OF MAKING THE SAME

Jay L. Lewis, Concord; Louis M. Puster, Knoxville, and Harold G. Brakebill, Concord, all of Tenn., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Nov. 20, 1972, Ser. No. 307,985
Int. Cl. G05b 11/48; G05d 23/275
U.S. Cl. 236—87 **24 Claims**



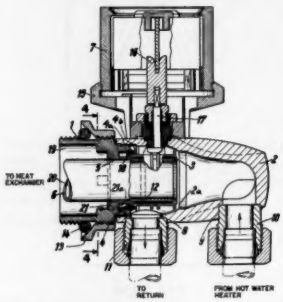
A temperature responsive device having a support frame carrying a valve seat that is adapted to be opened and closed by a ball valve member urged to its closed position by a bimetal member having one of its ends operatively associated with the ball valve member and the other end thereof secured to one end of a lever that has its opposed ends respectively disposed against the support frame and being secured solely thereto by a calibration screw that passes through an opening in a triangularly shaped tongue carved from an itnermediate portion of the lever so that the bend line for the lever machine is intermediate the calibration screw and one of the ends of the lever. The other end of the lever bears against a cam surface which can be made adjustable for temperature selection purposes.

3,813,035

FOUR-WAY VALVE FOR WARM WATER HEATERS

Alberto Bruno Wobig, Luneburg, Germany, assignor to Fa. Alberto Wobig Armaturenfabrik, Luneburg, Germany

Filed Oct. 7, 1971, Ser. No. 187,342
Claims priority, application Germany, Oct. 8, 1970, 2049356; Oct. 8, 1970, 2049355
Int. Cl. G05d 23/08
U.S. Cl. 236—101 **4 Claims**



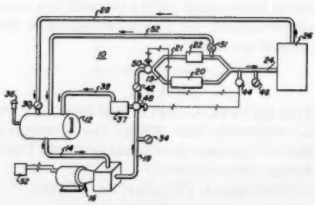
A four-way valve for heat exchangers and hot water heaters comprising a valve seating housing which includes a hot water inlet opening at one end and a hot water return opening at the other end thereof; a valve guide integrally formed with the housing and disposed about the hot water return opening; and a plurality of spaced-apart, adjacent apertures disposed in a radial arrangement in said housing between said openings thereof. A valve housing head is mounted on the valve seating housing and couples a plurality of heating supply and drain pipes thereto. A hot water pipe from the hot water heater is disposed within the valve guide in the hot water return opening of the valve seating housing to couple the valve to the heater. Valve seats are disposed in the housing and valve head, and are engaged by end members formed on the end of a valve body slidably disposed on the valve guide. A rotatable adjustment head is coupled to the valve body for controlling the flow of water through the valve.

3,813,036

HEATING SYSTEM

George H. Lutz, Binghamton, N.Y.

Filed May 8, 1973, Ser. No. 358,314
Int. Cl. G05d 23/02
U.S. Cl. 237—2 R **4 Claims**

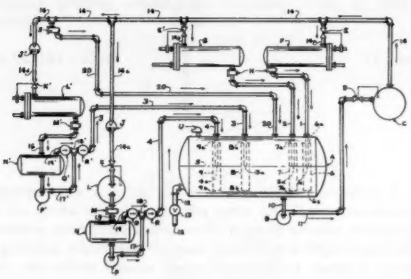


A heating system utilizing a closed oil system and a friction element for heating the oil as the oil is forced through the ele-

ment. The oil's path is from a storage tank through the friction element, then to the radiation units and then is returned to the storage tank. A high temperature path and a low temperature path are provided to improve comfort control.

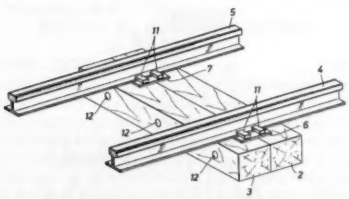
The heating element is formed of woven stainless steel which is compressed in a mold to obtain sufficient strand density to produce a high heat of friction.

3,813,037
CLOSED CONDENSATE SYSTEM
Martin Bekedam, P.O. Box 10266, Orinda, Calif. 94610
Filed June 13, 1972, Ser. No. 262,272
Int. Cl. F24d *1/00*
U.S. Cl. 237—9 R **4 Claims**



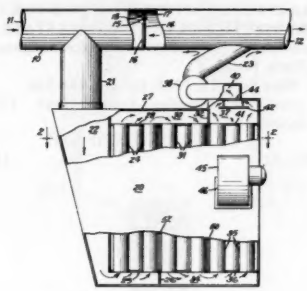
A closed condensate system for steam in which the steam from a boiler is used for hot water heating, air conditioning, laundries, domestic hot water in hospitals and large office buildings, where all of the steam from the boiler is used and all of the condensate from the steam can be returned to the boiler. A closed cycle condensate receiver is used in the system and novel means is used for maintaining a pressure within the receiver so that the temperature of the condensate returned to the receiver will always be lower than the corresponding pressure within the receiver. This assures that the closed condensate system returns the condensate from the heat exchanging elements of the system back to the boiler without flash loss.

3,813,038
RAILROAD TIE
Roy R. Pryor, and Harold A. Pryor, P.O. Box 26, both of Woodville, Tex. 75979
Filed Sept. 13, 1971, Ser. No. 179,719
Int. Cl. E01b *3/10*
U.S. Cl. 238—37 **14 Claims**



An improved railroad tie member is formed of two wooden half-ties which are secured together with one or more reverse threaded bolts arranged in parallel with the tracks. The bolts are preferably inserted in the tie halves whereby the bolts may be turned to resecure the two halves while the tie assembly is installed in the track.

3,813,039
HEAT EXCHANGER
Gilbert J. Wells, 2015 Bronson St., Littleton, N.H. 03561
Filed Mar. 26, 1973, Ser. No. 344,829
Int. Cl. F24b *7/04*
U.S. Cl. 237—55 **10 Claims**

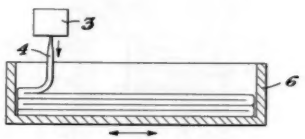


A heat exchanger connected to the smoke pipe of a central heating furnace below the horizontal plane of the smoke pipe and with an induced draft such that upon operation of the induced draft, the smoke pipe is blocked requiring the hot flue gasses to bypass through the heat exchanger and when the furnace operates without operation of the induced draft, the smoke pipe is open for direct flow of hot flue gasses.

ERRATUM

For Class 238—84 see:
Patent No. 3,813,038

3,813,040
PLASTIC RAILWAY CROSSTIE
Ben W. Heinemeyer, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.
Filed July 5, 1972, Ser. No. 269,106
Int. Cl. E01b *3/10*
U.S. Cl. 238—84 **3 Claims**



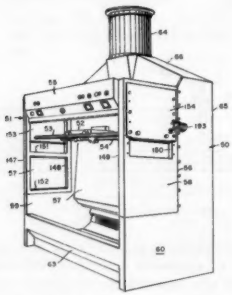
A cellular thermoplastic product such as a railway crosstie is produced by an apparatus comprising extrusion means for producing a web of a foamable thermoplastic polymer such as polyethylene, a mold corresponding to the size and shape of the cellular product positioned adjacent the extrusion means to receive the web of foamable thermoplastic polymer, and means for imparting relative reciprocal motion between the mold and the extrusion means in a direction generally normal to one of the surfaces of the web such that the web is deposited in layers within the mold. In producing a cellular thermoplastic product by the method of the invention, the steps include plastifying a thermoplastic polymer such as polyethylene in the presence of an expanding agent to produce a foamable thermoplastic polymer, forming the foamable thermoplastic polymer into a web, depositing the web into a mold, and imparting relative reciprocal motion

between the web and the mold in a direction normal to at least one surface of the web such that the web is deposited in layers within the mold. The foamable thermoplastic layers in the mold fuse together at their mating surfaces thereby resulting in the cellular thermoplastic product.

3,813,041
APPARATUS FOR STORING A LIQUID FOR ITS DISTRIBUTION IN THE GASEOUS STATE
Jean Jacques Kleine, Letraz-Sevrier, France, assignor to S. T. DuPont, Paris, France
Filed Sept. 12, 1972, Ser. No. 288,396
Claims priority, application France, Sept. 13, 1971, 71.32946; June 6, 1972, 72.20346
Int. Cl. A24f *25/00*; A61l *9/04*
U.S. Cl. 239—55 **11 Claims**

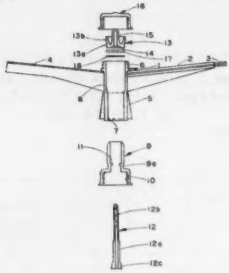
Apparatus for storing liquified gas under pressure in a container from which the liquid is released as a gas into an atmosphere or region at a lower pressure than the storage pressure. This container additionally contains a solid polymer on which the liquid acts like a swelling agent so that the polymer becomes a gel which releases the liquid stored therein as a gas.

3,813,042
SPRAY BOOTH
Harry Szczepanski, 755 Oakleigh N.W., Grand Rapids, Mich.
Filed Oct. 16, 1972, Ser. No. 297,666
Int. Cl. B05b *1/36*
U.S. Cl. 239—193 **15 Claims**



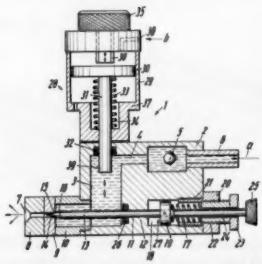
A spray booth is equipped with an air-exhaust system and a high-volume low-pressure water circulating system moving the water from a settling sump to troughs supplying water-curtain panels providing water screens along lines of drainage. The water is pumped by a water lift open to local atmospheric pressure. The configuration of the booth provides for accepting spray gun equipment in the form of replaceable modules. One form of these modules includes a spray gun carriage having a linear path of movement induced by a differential chain drive.

3,813,043
ROTARY WATER SPRINKLER
Avraham Ben Mordehai, Hazait St. 8, Neve Magen, Israel
Filed Mar. 6, 1973, Ser. No. 338,557
Claims priority, application Israel, Mar. 9, 1972, 38942
Int. Cl. B05b *3/06*, *1/30*
U.S. Cl. 239—204 **8 Claims**



A pressure stabilizing device for use in a water sprinkler comprising outer and inner tubular members which are displaceable relative to each other over a substantial portion of the axial length of said inner member, means for coupling the inner member to a water supply source whilst the outer member is coupled to or is couplable to said spray nozzle(s) said inner tubular member terminating in an elongated outlet conduit having at least one outlet port extending axially along said outlet conduit, a centrally apertured throttle member rigidly secured to said outer member so as to be rotatable therewith, said conduit member extending through said throttle member, biasing means designed to bias said members in a first direction so that said throttle member uncovers said aperture(s), the direction of flow of water from said outlet conduit into said outer tubular member being such as to tend to displace said members in an opposite direction so as progressively to throttle the flow of water out of said outlet port(s) the degree of throttling being a function of the extent of the relative displacement of said members.

3,813,044
HIGH PRESSURE DOSING APPARATUS, ESPECIALLY FOR GRINDING AND POLISHING MACHINES
Walter Westenberger, Kittelerstrasse 11, D-6051 Laemmerspiel, Germany
Filed Jan. 29, 1973, Ser. No. 327,763
Claims priority, application Germany, Feb. 3, 1972, 2204942; Aug. 26, 1972, 2242030
Int. Cl. B05b *1/30*
U.S. Cl. 239—533 **14 Claims**



A high pressure dosing apparatus includes a housing with a chamber for receiving material to be dispensed. A dispensing

output is controlled by a control valve which operates in response to pressure within the chamber so that the outlet is opened only when the pressure within the chamber exceeds a given level. A pressure generating means for controlling pressure within the chamber includes a pressure operated piston having a piston rod extending into the chamber. A pair of stops are provided for limiting the movement of the piston in opposite directions.

3,813,045

HAMMER CRUSHER

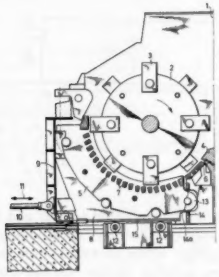
Karl Von Greiffenstern, Ennigerloh, Germany, assignor to Polysius AG, Neubeckum

Filed Sept. 25, 1972, Ser. No. 291,643

Claims priority, application Germany, Nov. 8, 1971, 7142142

Int. Cl. B02c *13/04, 13/26*

U.S. Cl. 241—88.4 **7 Claims**



A hammer crusher having a housing within which is journaled one or more rotatable hammer shafts cooperable with an anvil and gratings, each grating including replaceable grating bars. The grating bars are accessible for replacement by being mounted on a carrier movable into and out of the housing along a substantially horizontal path and without requiring appreciable lowering of the carrier to effect its removal from the housing.

3,813,046

GYRATORY CRUSHER WITH CAPACITY REGULATOR

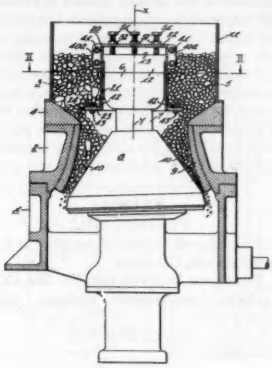
Robert H. Kemnitz, Appleton, and Robert J. Pollak, Wauwatosa, both of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Nov. 16, 1972, Ser. No. 307,052

Int. Cl. B02c *23/02*

U.S. Cl. 241—202 **9 Claims**

A gyratory crusher is described having an upright shaft supporting a generally conical crushing head within a surrounding stationary concave carried by a crusher frame and defining an annular crushing chamber between the concave and the head. A capacity regulator is provided having a cap, and a generally cylindrical member with a vertical central axis. The cylindrical member depends from the cap to provide a lower end coaxial with the cap. an annular shield is connected to the lower end of the depending member to project radially outward therefrom with an outer diameter substantially equal to the outer diameter of the top of the crushing chamber. A regulator support means is carried by the crusher, that projects within the depending member and defines a regulator support surface for carrying the regulator with the annular shield coaxially over the crushing chamber. A vertically jacking mechanism is interposed between the cap of the regulator and the support surface within the depending member of the regulator, operative to raise and lower the annular shield relative to the concave and regulate the crushers capacity to receive and pass stone into the crushing chamber.



3,813,047

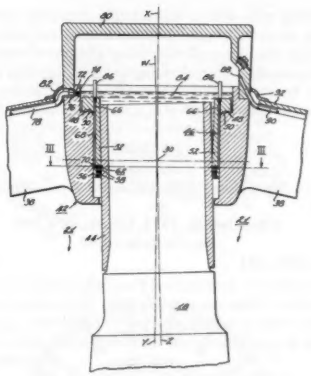
SPIDER BEARING ASSEMBLY FOR GYRATORY CRUSHERS

James D. Torrence, and Fred L. Graves, both of Appleton, Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 7, 1972, Ser. No. 312,841

Int. Cl. B02c *2/04*

U.S. Cl. 241—211 **7 Claims**



A spider bearing assembly for a gyratory crusher is disclosed in which a flanged bushing has a bearing sleeve projecting downwardly between the top of a gyrating shaft and a spider hub, and the sleeve has a lower edge below a fulcrum point within the hub about which the shaft gyrates. A lubricant seal is arranged between the shaft and the hub, which cooperates with the sleeve edge to define an annular lubricant collecting groove around the shaft. The bushing defines one or more lubricant pressure relief passages from the annular groove to the top of the bushing. A source of lubricant is connected to a reservoir defined by the upper end of the shaft, the top of the bushing, and an inner periphery of the hub to supply

lubricant to a level above the bushing. A generally vertical vent tube is connected to each pressure relief passage and projects upwardly above the reservoir lubricant level to vent lubricant pressure in the annular groove to atmosphere above the reservoir lubricant level, to relieve lubricant pressure on the seal that builds up as a result of pumping action of the crusher shaft gyrating in the bushing. The distance that the lower edge of the bushing sleeve is below the fulcrum point, is preferably substantially less than the distance between the top of the shaft and the fulcrum point, to minimize lubricant pressure acting downwardly on the seal and a pair of relatively small diameter relief passages will usually be sufficient to vent pressure from the annular lubricant collecting groove.

3,813,048

CUTTING MILL

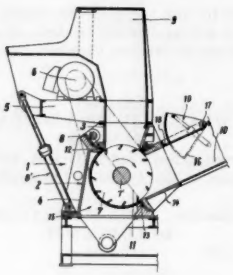
Heinz Lehr, Gelnhausen, Germany, assignor to Condux-Werk, Wolfgang bei Hanau, Germany

Filed June 26, 1972, Ser. No. 266,133

Claims priority, application Germany, July 2, 1971, 2133086

Int. Cl. B02c *4/12*

U.S. Cl. 241—224 **4 Claims**



A cutting mill with a horizontally disposed cutting rotor receiving pieces of plastic material from a vertically disposed input chute and pieces of material of a different size and shape from an upwardly inclined charging chamber. This chamber is disposed to extend through a lateral wall of the machine located on an upwardly pivotal part of the machine housing.

3,813,049

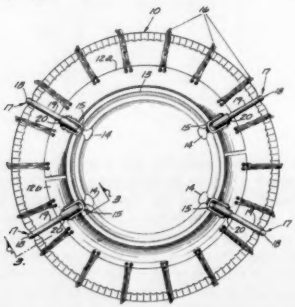
TIRE CHAIN

Robert L. Thompson, 9930 Bacamora Ave., Whittier, Calif. 90603

Filed Oct. 20, 1972, Ser. No. 299,409

Int. Cl. B60c *19/00*

U.S. Cl. 152—241 **11 Claims**



The present invention relates to a tire chain; and more particularly relates to an emergency type tire chain that may be easily installed for adverse driving conditions, provides improved ride characteristics over piror art tire chains, and may be easily removed. The disclosed chain is designed so that high tensile elements thereof are automatically tightened onto the tire without any effort on the part of the auto owner. Once the adverse driving conditions have cleared up, the disclosed tire chain is easily removed.

3,813,050

APPARATUS FOR CONTINUOUSLY WINDING THREAD ONTO BOBBINS

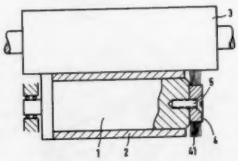
Hans Landwehrkamp, Gerolfing, Germany, assignor to Schubert & Salzer Maschinenfabrik Aktiengesellschaft, Ingolstadt, Germany

Filed Nov. 29, 1972, Ser. No. 310,223

Claims priority, application Germany, Dec. 27, 1971, 2164784

Int. Cl. B65h *54/02, 65/00*

U.S. Cl. 242—18 A **6 Claims**



Thread can be wound onto a first bobbin and then, without interruption, onto a second bobbin, by providing a thread-engaging member adjacent to the second bobbin to hold a bight of thread stationary relative to that second bobbin, as it is rotated to begin positive winding of the following continuous thread portion. The thread-engaging member is a ring having a core smaller than the inside diameter of its adjacent hollow core bobbin and a resilient annular portion carried between the ring core having an outside diameter at least as great as the outside diameter of the empty bobbin. The annular portion is deformable for sliding a filled bobbin axially over the resilient portion; and, when the bobbin is removed, such portion resumes its original shape. The resilient annular portion may be flexible bristles for catching a bight of thread pulled across it or may be a perforated hollow ring connected to a suction source.

3,813,051

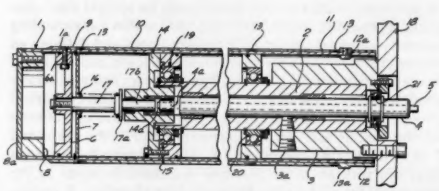
BOBBIN-SUPPORTING CHUCK

Harry B. Miller, Hopedale, Mass., assignor to Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft, Karlsruhe, Germany

Continuation-in-part of Ser. No. 262,973, June 15, 1972. This application Nov. 6, 1972, Ser. No. 304,254

Int. Cl. B65h *54/54, 75/30, 79/00*

U.S. Cl. 242—46.4 **6 Claims**



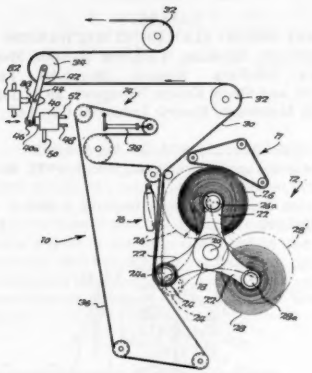
A bobbin-supporting chuck for filament winders has a hollow tubular shaft which is stationarily mounted, and which is

surrounded by a chuck roll, with bearings mounting the latter on the former for rotation. The chuck roll periphery carries axially compressible rings of elastomeric material so that, when compressed, they will project radially and frictionally retain a bobbin mounted on the roll. A slidable rod extends through the hollow shaft and cooperates with an internal arrangement for effecting the compression of the elastomeric rings.

3,813,052
WEB TENSION CONTROL SYSTEM

Clifford Swann, Fort Erie, Ontario, Canada, and Gerald W. Siminski, Buffalo, N.Y., assignors to Arcata Graphics Corporation, Depew, N.Y.

Filed Apr. 13, 1973, Ser. No. 351,098
Int. Cl. B65h *19/00, 21/00*
U.S. Cl. 242—58.3 **3 Claims**



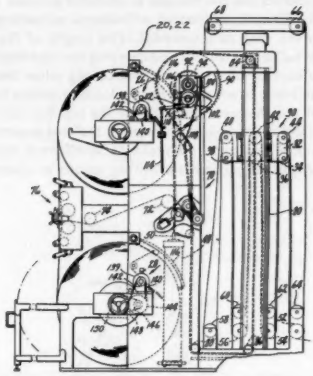
A system for use in controlling the substitution of a replacement roll of paper for an expiring roll of paper, while maintaining essentially uniform tension conditions in the paper web forwarded to a web printing machine. The system utilizes dual web tension responsive controls for controlling web tension during the roll replacement or transition stage, and provides an emergency stop control for arresting rotation of both of the replacement and expiring rolls.

3,813,053
WEB WINDING MACHINES

Richard A. Butler, Jr., Brookline, and Joseph F. Bonarrigo, Pembroke, both of Mass., assignors to Butler Automatic, Inc., Canton, Mass.

Continuation of Ser. No. 809,146, March 21, 1969, abandoned. This application Jan. 6, 1972, Ser. No. 215,896
Int. Cl. B65h *19/16*
U.S. Cl. 242—58.4 **8 Claims**

Web winding apparatus has a pair of roll core supports at first and second winding stations, an accumulator upstream from the winding stations for storing web and a splicer in the web path between the winding stations and the accumulator. The splicer includes a pair of nip rolls movable toward and away from one another and means for moving the rolls. A guide guides running web from the accumulator around one of the nip rolls to a core in one of the winding stations while a web leader is retained at the other nip roll, which leader is also attached to the other roll core. The nip rolls are moved together to press the running web and leader into adhering engagement to form a splice while the accumulator stores the running web. The running web is then severed downstream

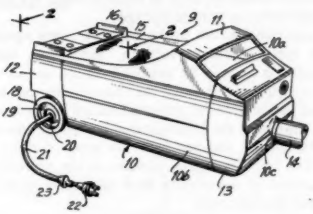


from the splice and the roll core at the second winding station is accelerated up to running speed while the web stored in the accumulator is reduced in preparation for the next splice.

3,813,054
CORD-WINDING STRUCTURE FOR MOBILE ELECTRICAL APPLIANCE

Christian Staffansson Klingspor, Stockholm, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed May 9, 1972, Ser. No. 251,798
Claims priority, application Sweden, May 10, 1971, 6024/71
Int. Cl. B65h *75/42, 75/48;* **A47l** *9/26*
U.S. Cl. 242—86.5 R **10 Claims**



A mobile electrical appliance having cord-winding structure therein for an electrical cord which is accessible exteriorly of the appliance and passes through the axis of an apertured supporting wheel rotatably mounted on the appliance at an opening in its side wall.

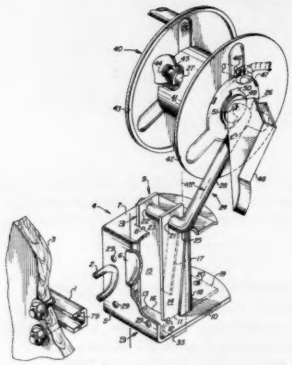
3,813,055
READILY DETACHABLE WATER SKI TOWLINE PAY-OUT AND RETRIEVAL APPARATUS

John W. Pickrell, 4206 N. 68th St., Scottsdale, Ariz. 85251

Filed Feb. 2, 1973, Ser. No. 329,037
Int. Cl. B65h *75/40*
U.S. Cl. 242—86.5 A **4 Claims**

Water ski towline reel apparatus is disclosed which may be detachably affixed to a semi-permanently fixed bracket disposed at the rear of a towboat. An elongated rod is provided with two right angle bends directed such that the rod ends are parallel to one another. An outer rod end is adapted to receive the reel acting as the shaft therefor. The inner rod

end is welded to a channel member after being inserted through aligned holes in opposite sides and near one end thereof. The channel member is provided with a pair of notches near its other end and is adapted to pass vertically through a pair of apertures in a U-shaped mounting bracket affixed to the rear of a towboat. The length of the channel member is sufficient for the end carrying the reel shaft to clear the upper surface of the upper bracket leg when the notches engage the lower bracket leg. Spring loading means bearing on the side of the channel member urge the notches into such engagement until it is desired to remove the reel apparatus from the bracket. When such removal is to be effected, the channel member is pushed against the spring means to disengage the



notches from the lower bracket arm such that the channel member and reel assembly may be lifted through the apertures in the channel arms for remote storage.

A three position friction brake variably bears against one side of the reel to achieve locking, restraining, and free-running operation as may be required during use of the apparatus. The rope is fed through the channel member beneath the inner rod end in order to provide a safety factor in which a knot in the rope near the attached end is stopped, because of its size, between the rod end and the upper surface of the upper bracket leg. Thus, any sudden strain resulting from complete pay-out of the towline from the reel is taken by the bracket rather than the reel.

3,813,056

MICROFILM CARTRIDGE AND ADAPTER APPARATUS

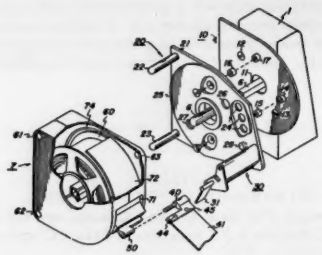
James M. Hagen, Riverside, and Clayton M. Haigh, Covina, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 205,936, Dec. 8, 1971. This application Feb. 20, 1973, Ser. No. 333,577

Int. Cl. G03b *1/04*; **G11b** *15/32, 23/04*

U.S. Cl. 242—197 **23 Claims**

Apparatus for allowing a cartridge to be utilized with a variety of film viewers. A cartridge adapter, comprising a stationary plate and a plate rotatably mounted thereto, is attached to a viewer. The rotatable plate includes a clamp and is rotatable to a predetermined angle. The clamp is operative to hold a trailer attached to the take-up reel of the film viewer being utilized. A cartridge, including a variable angle film exit port through which a film leader attached to the film within



the cartridge extends, is mounted to the cartridge adapter in a manner such that the leader is coupled to the trailer held by the adapter clamp.

3,813,057

REEL MOUNT ELEVATING MECHANISM

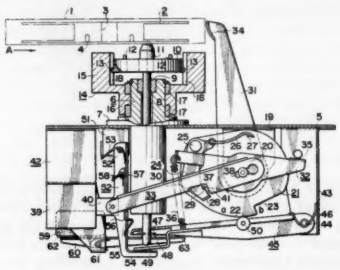
Hideki Sakumoto, Hirakata; Yoshiteru Namoto, Moriguchi; Masaharu Ushihara, Katano; Shizuhiko Tanigawa, Moriguchi, and Shozo Kanda, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 28, 1972, Ser. No. 310,003

Claims priority, application Japan, Dec. 1, 1971, 46-97378; Dec. 23, 1971, 46-503

Int. Cl. G03b *1/04*; **G11b** *15/32, 23/04*

U.S. Cl. 242—198 **5 Claims**



A reel mount elevating mechanism which is so constructed that an energy for elevating a vertically movable reel mount is accumulated incident to the movement of a cartridge inserted in a direction perpendicular to the direction in which said reel mount is movable, and is released when the cartridge has reached a predetermined position relative to said reel mount, whereby said reel mount is elevated by said energy.

3,813,058

CONVEYOR SYSTEM

Robert William George Smith, Gosport; David Michael Arthur Barron, Portsmouth, and Arthur George Wingrove, Newbury, all of England, assignors to Dialled Despatches Limited, Lee-on-Solent, Hampshire, England

Continuation-in-part of Ser. No. 89,587, Nov. 16, 1970, abandoned. This application July 10, 1972, Ser. No. 270,457

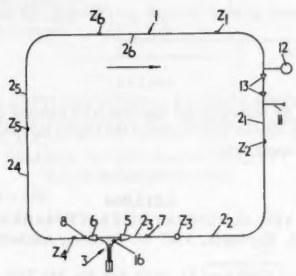
Claims priority, application Great Britain, Nov. 18, 1969, 56417/69

Int. Cl. B65g *51/46*

U.S. Cl. 243—16 R **11 Claims**

A conveyor system including a pneumatic main ring having a number of branch loops accommodating a number of

receiver/dispatch stations respectively, diverter means for diverting a carrier into each loop, sensing means or zone switches dividing the main tube into zones, a control unit having a memory for each zone (Z_n) and arranged to receive the address signal from the memory of the preceding zone (Z_{n-1}) to control the passage of the carriers around the ring, the sensing means or zone switches being arranged to sense the passage of a carrier from each zone to the next zone and arranged to move the address signal from the memory of the first



zone into the memory of the second zone and there is a switch located in the main ring upstream from and associated with the diverter means, this switch being controlled by the control unit so that it is in an operable condition only when the memory of the zone in which it is located contains the address signal of a station in the loop controlled by the associated diverter means, this switch being capable, in its operable condition, of sensing the passage of the carrier and operating the associated diverter means to divert the carrier to its destination station.

3,813,059

AEROFOIL ASSEMBLY

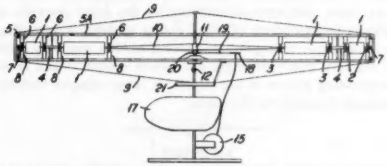
Raymond Jefferson, 84 Park Rd., Rosyth, Fife, England

Filed Aug. 31, 1972, Ser. No. 285,373

Claims priority, application Great Britain, Sept. 15, 1971, 42951/71

Int. Cl. B64c *29/02*

U.S. Cl. 244—12 C **8 Claims**



An aerofoil assembly for rotary-wing aircraft, which includes a generally planar annular frame which supports radially inner and outer sets of aerofoil blades. The two sets of blades each lie in the plane of the frame and are each disposed to form an annulus and are supported by the frame for rotation about a common axis. In a preferred embodiment, the inner set of blades has a substantially larger surface area than the outer set and the means diameters of the two sets are such that the two sets of blades produce a balanaced lifting force in operation for equal rotation velocities of the two seats.

3,813,060

AIRPLANE

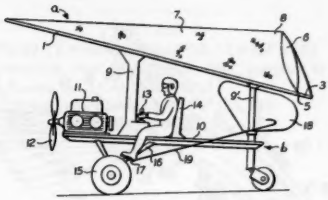
Matsuji Mochizuki, 3391-1 Muramatsu, Shimizu-shi, Japan

Filed Feb. 20, 1973, Ser. No. 333,798

Claims priority, application Japan, May 24, 1972, 47-51347

Int. Cl. B64c *3/00*

U.S. Cl. 244—13 **3 Claims**



An airplane includes a wing on which a sheet of material such as canvas or the like is disposed whereby under flight conditions, the sheet material becomes inflated to provide the required lift to the airplane. An airplane body is supported under the wing and a propellor-driving engine imparts forward motion to the plane so that the on-rushing air passes underneath the wing to inflate the latter and provide the necessary lift for take-off and sustained flight.

3,813,061

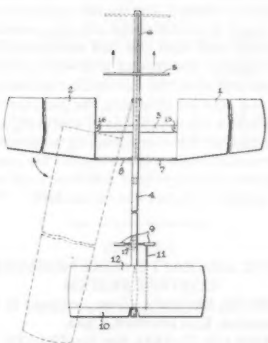
PARACHUTIST'S GLIDER

Howard N. Greenhaigh, East Hanover, N.J.

Filed Apr. 2, 1973, Ser. No. 346,950

Int. Cl. B64c *31/04*

U.S. Cl. 244—16 **6 Claims**



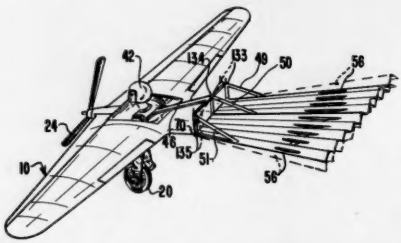
A glider for use by a parachutist to provide an extended and controllable freefall prior to deployment of the user's parachute. The glider is provided with pivotable wings mounted on the fuselage of the craft and connected by means of hinged rods to a slidable hand operated control member whereby the wings may be moved by the user during flight to vary the glider's wingspan. Adjustable foot pedals for control of the glider's elevators are also provided.

3,813,062

FAN-LIKE TAIL SECTION FOR MAN-POWERED GLIDER AIRCRAFT

Alfred G. B. Prather, P.O. Box 53, Lanham, Md. 20801

Division of Ser. No. 188,289, Oct. 12, 1971, Pat. No. 3,750,981. This application May 9, 1973, Ser. No. 358,520
Int. Cl. B64c *31/04*
U.S. Cl. 244—16 **2 Claims**



The aircraft wings have means for varying their camber and include a fan-like tail section hinged to the rear of a rigid frame surrounding the pilot's space between the inner ends of the side wing sections, in substantially the same plane therewith, a unicycle being fixed to said rigid frame to provide a seat for the pilot. A collapsible propeller is mounted on a shaft extending forwardly from a bearing on the front of said rigid frame, and is driven by a chain or belt drive from a sprocket or pulley on the wheel of the unicycle, the blades of the propeller being keyed to the propeller shaft through limited annular slot and key connections between adjacent blade bearings, to spread the blades to their proper angular spacing whenever the shaft is driven, and to return them to a common vertical hanging position so as to reduce their drag during gliding operations whenever no power is applied.

The pilot sits on the unicycle seat, drops a yoke harness over his shoulders which is operatively connected to control the inclination and twist of the hinged tail section, whereby the shifting of his body forward, lifts the tail section to cause an increase in the angle of attack of the side wing sections, and by shifting his body rearward the tail section is lowered to decrease the angle of attack, and if he moves his body from side to side he can twist the tail section accordingly. After placing this yoke over his shoulders, the pilot inserts his arms through openings in the inner ends of said wing sections and grasps the handles of the corresponding hand control plates which are operatively connected to control the cambers of the side wing sections, the warping of the outer ends of these sections and the spread of the fan-like tail section.

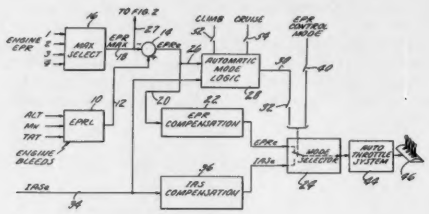
3,813,063

AUTOMATIC AIRCRAFT ENGINE PRESSURE RATIO CONTROL SYSTEM

Anthony N. Martin, Simsbury, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed July 21, 1972, Ser. No. 274,123
Int. Cl. B64c *15/00*
U.S. Cl. 244—77 D **8 Claims**

An automatic thrust management system for gas turbine engines in single or multi-engine aircraft is disclosed. An engine pressure ratio limit is automatically calculated using known techniques and compared with the actual engine pressure ratio of the engine having the maximum pressure ratio for the purpose of an automatic control system. In one mode of operation, the throttles for each engine are trimmed to maintain the engine pressure ratio at the limit value. In another mode of operation, each engine is trimmed as necessary to insure that the engine pressure ratio does not exceed the limit value. The automatic thrust management system of this invention may be incorporated together with existing autothrottle systems in aircraft which control the engine throttles as a function of airspeed error.

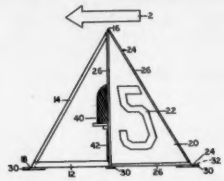


3,813,064

VISUAL RUNWAY DISTANCE MARKER

Eugene R. Heyworth, 3705 W. 84 Ave., Anchorage, Alaska 99502

Filed Apr. 21, 1972, Ser. No. 246,254
Int. Cl. B64f *1/18*
U.S. Cl. 244—114 R **8 Claims**



The remaining distance on a runway is indicated by large numerals indicating hundreds or thousands of feet remaining to the end of the runway. The distance markers inform the pilot taking off of the remaining distance to the end of the runway so that the pilot may know whether an aborted takeoff is possible and so that the pilot of a landing aircraft may calculate necessary braking action to stop the aircraft short of the runway end. The marker is constructed of a readily collapsible aluminum angle frame having a triangular base pyramid form. The apex of the pyramid is positioned directly over a standard runway light. Anchors at vertices of the base provide easy anchoring independent of the lighting system. A translucent plate covers one triangular side and is held in place by a triangular retainer made of angle aluminum pieces which fit over corresponding pieces in the frame. A large opaque number is positioned centrally on the plate.

3,813,065

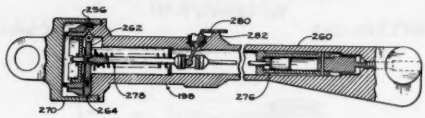
LOCKING MECHANISMS AND ACTUATOR ASSEMBLIES OF COAXIAL LOCKED REMOTELY AT SELECTED LOCATIONS AFTER MOTIONS OF A NEARLY COMPLETE CIRCUMFERENTIAL ONE PIECE CHAMFERED LOCKING RING

Harold W. Hallesy, and Howard C. Revenig, both of Yakima, Wash., assignors to Decoto Aircraft, Inc., Yakima, Wash.

Continuation-in-part of Ser. No. 835,527, June 23, 1969, abandoned. This application Apr. 12, 1972, Ser. No. 243,268
Int. Cl. B64f *1/12*
U.S. Cl. 244—115 **18 Claims**

A locking mechanism for coaxial load carrying members is described, which utilizes a one piece split, chamfered locking

ring as a locking member between the load carrying members. Application of predetermined loads to the load carrying members releases the locking ring from its locking condition by flexure of the ring.



3,813,066

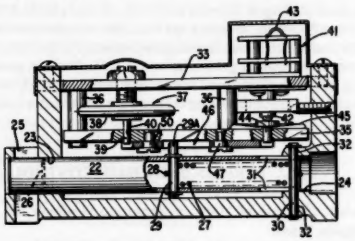
TIME AND ALTITUDE SENSING RELEASE MECHANISM

Jerry L. Raznov, Philadelphia, Pa., assignor to Ametek, Inc., New York, N.Y.

Filed Sept. 14, 1972, Ser. No. 289,109

Int. Cl. B64d *17/56, 17/58*

U.S. Cl. 244—150 **5 Claims**



A mechanism for releasing another device or activating the same including a pivoted sear arm holding a spring loaded plunger in cocked position until the sear arm releases the same. The sear arm cannot move until both a timing means and an altitude sensing means release the sear arm. The sear arm, sear surface and its pivot are arranged relative to the plunger so that a moment of force exists to assist in rotation of the sear upon release thereof.

3,813,067

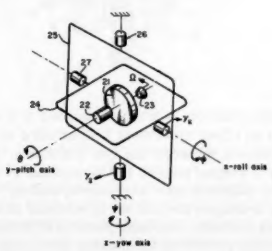
ATTITUDE STABILIZATION SYSTEM

Halbert Louis Mork, Palos Verdes Peninsula, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed June 29, 1972, Ser. No. 267,575

Int. Cl. F41g *7/00;* **B64c** *17/06*

U.S. Cl. 244—3.22 **11 Claims**



An attitude stabilization and control system is disclosed for providing accurate control and stabilization of a space vehicle traveling in a circular or near circular orbit relatively to a body such as the earth. A reaction wheel operated at a modulated bias speed is mounted in a gimbal system having two axes of freedom. The speed of the wheel and the gimbal angles are controlled by electronically implemented logic based upon only two-axis attitude error sensing to provide three-axis stabilization and control in the presence of disturbances. Secular disturbances cause growth in the gimbal angles and the wheel speed and are intermittently compensated by actuation of small thrusters or magnetic coils.

3,813,068

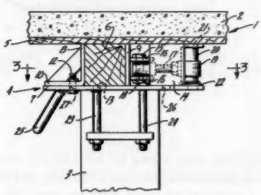
CONCRETE FORM VIBRATOR CLAMP UNIT

George H. Binsfeld, Port Washington, Wis., assignor to Construction Forms, Inc., Cedarburg, Wis.

Filed June 2, 1972, Ser. No. 259,149

Int. Cl. F16m *13/00*

U.S. Cl. 248—14 **9 Claims**



A concrete form vibrator clamp includes a flat mounting plate with a first L-shaped clamping wall bolted thereto and a second pivotally mounted to the end of a movable shaft ending in a tubular cam follower. An eccentric cam is pivotally attached to the cam follower. The lever is positioned between a locking position and a release position to selectively move the second wall toward and away from the clamping wall and thereby provide for selective attachment of the clamping unit to the concrete form. A pair of vibrating attachment bolt units are secured to the opposite face of the plate and project outwardly to receive the input of the vibrating apparatus. The bolted wall permits attachment and release of the unit to a two-by-four or four-by-four brace.

3,813,069

MOUNTING DEVICE FOR FURNITURE

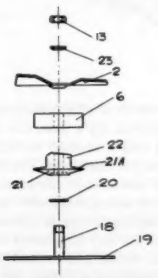
Thomas Sydney Fletcher, Underwood, England, assignor to Fletcher Brothers (Castings) Limited, Ilkeston, Derbyshire, England

Filed Sept. 13, 1972, Ser. No. 288,758

Claims priority, application Great Britain, Sept. 29, 1971, 45329/71

Int. Cl. A47c *1/02*

U.S. Cl. 248—188.1 **6 Claims**



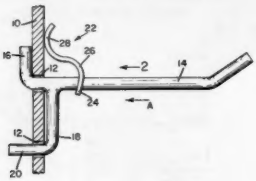
A mounting device for furniture comprising a mounting plate for securing to an article of furniture, a resilient pad

compressibly interposed between the mounting plate and a body, a shaft extending through the body, the pad and mounting plate and means for clamping the mounting plate and the body together.

3,813,070
LOCKING DEVICE FOR HANGERS FOR PERFORATED BOARDS

Henry Lloyd Hanson, 80 Salisbury St., Worcester, Mass. 01609

Filed Nov. 30, 1972, Ser. No. 310,856
Int. Cl. F16m *13/00*
U.S. Cl. 248—223 5 Claims

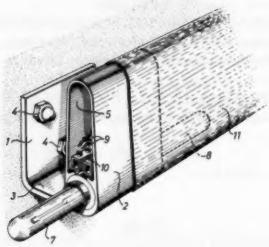


In combination with a peg or hanger pin used as an article hanger with a perforated board, a locking device comprising a key having a compound bend with an opening in one portion receiving the peg, the key being slidable along the peg to a point where another portion of the key contacts the perforated board, locking the peg thereto in the manner of a lockable washer.

3,813,071
FASTENER ASSEMBLY FOR HANDRAILS

Nils Eric Noryd, Bergsgatan 20, Vetlanda, Sweden

Filed Apr. 12, 1972, Ser. No. 243,238
Int. Cl. A47h *1/144*; A47b *97/00*
U.S. Cl. 248—251 1 Claim

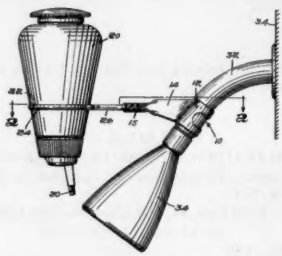


A handrail in the form of a tube longitudinally slotted at its bottom and supported by a fastener assembly having a first vertical solid leg and a second vertical hollow leg interconnected by a horizontal base web. The first leg is adapted to be mounted at a wall surface and the second leg has an outer wall with a cross-section which conforms with the inner wall of the tubular handrail and is snugly surrounded thereby. The internal cavity of the second leg forms an upper compartment housing electrical wiring and connection means, and a lower compartment serving as a fitting for electrical illumination means emitting light through the slot in the bottom of the tubular handrail.

3,813,072
ATTACHING BRACKET WITH RECEPTACLE HOLDER

Francis M. Moore, 11 Patricia Rd., Danvers, Mass. 01923

Filed Nov. 3, 1972, Ser. No. 303,545
Int. Cl. A47c *7/70*
U.S. Cl. 248—313 4 Claims

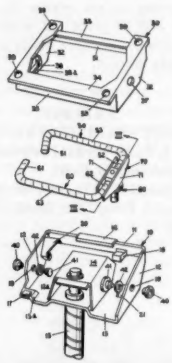


An attaching bracket has a clamp and oppositely disposed arms terminating in tubular portions. A receptacle has an encircling groove in its outer surface that receives a clasp of a holder from which two legs extend outwardly that are adapted to enter said tubular portions. In use said clamp is attached to a water pipe, holding said receptacle adjacent a shower head so that liquid from the receptacle mixes with shower water.

3,813,073
DUAL TORSION BAR CHAIR CONTROL

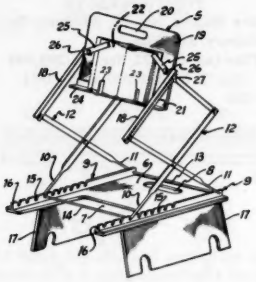
Robert G. Mohr, Grand Rapids, and Adrian R. Olree, Caledonia, both of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.

Filed Apr. 21, 1972, Ser. No. 246,381
Int. Cl. F16m *7/24*
U.S. Cl. 248—373 24 Claims



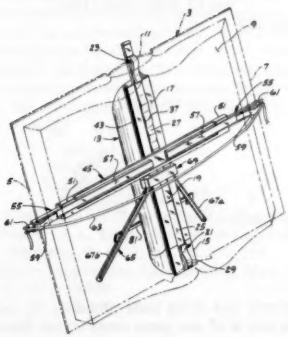
A tiltable platform is tiltably mounted to a stationary platform and its tilting movement is controlled by a dual torsion bar mechanism between the two platforms. The leg of one generally U-shaped torsion bar is received in a pocket in the stationary platform and the corresponding leg of another generally U-shaped torsion bar is received in a like pocket in the tiltable platform. The base portions of the torsion bars project generally parallel to the tilt axis, away from these pockets. The opposite legs of the torsion bars are received in a channel-shaped interconnecting bracket which includes an adjusting mechanism to adjust the pretension on the bars.

3,813,074
BOOK STAND
Charles S. Mulvaney, 2211 Greenleaf Ave., Chicago, Ill. 60645
Filed May 8, 1972, Ser. No. 251,445
Int. Cl. A47b *23/00*
U.S. Cl. 248—452 2 Claims



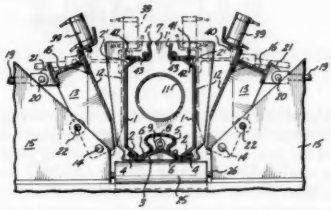
This invention consists of a horizontally disposed rectangular base that is supported above ones lap by means of a rectangular supporting wing that is hingedly secured to the underside of each longitudinal edge of the base. A pantograph type support is swingably secured for vertical adjustment to the upper longitudinal edge of the aforesaid rectangular base. A rectangular book rest is swingably secured between and to the upper point of the two already-mentioned pantograph type supports. The book rest is provided with structure adapted to hold the book or the like in place on the said rest in any desired position for easy reading.

3,813,075
COMBINATION BOOK HOLDER AND BOOK STAND
Keith C. Capper, Eureka, Mo., assignor to Aquarian-Age-Inventor, Inc., Eureka, Mo.
Filed Apr. 13, 1973, Ser. No. 350,889
Int. Cl. A47b *97/04*
U.S. Cl. 248—461 9 Claims



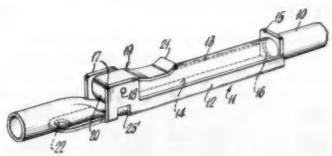
A combination book holder and book stand for use with a conventional, hard cover or soft cover book. The book holder has a hollow handle which may be removably clipped onto the end portions of the spine or the cover of books of various sizes and a support engageable with the front and back covers of the book for holding them open. A holder is provided for holding the pages of a book open to a desired page. Removably secured to the handle are legs for supporting the latter with the book held thereon in an inclined, upright reading position on a supporting surface. The handle has a removable end piece of access into the interior of the handle thus permitting the various parts of the book holder and book stand to be stored in the handle when shipped or when not in use.

3,813,076
CONCRETE PLANK MOLD FOR A MOLDING MACHINE
Roland D. Draughon, 2922 S. Adams, Tacoma, Wash. 98409; Paul D. Jensen, 1011-68th Ave. E., Tacoma, Wash. 98424; and Donald E. Jensen, 1005 Fife Heights Dr. N.E., Tacoma, Wash. 98422
Continuation-in-part of Ser. No. 822,506, May 7, 1969, Pat. No. 3,664,792. This application Apr. 17, 1972, Ser. No. 244,661
Int. Cl. E04g *11/50*
U.S. Cl. 249—50 8 Claims



A concrete plank mold including a bottom with a flexible groove-forming strip and sides tiltable relative to the bottom can be moved into and out of a molding machine on rollers. Plates swingable by fluid-pressure jacks at opposite sides of the mold are securable by latch jacks to the mold sides. Tapered mold end plates are held against the ends of the mold sides to confine the material in the mold during swinging of the mold sides to settle the concrete mix.

3,813,077
HOSE CLAMP
Edwin S. Kolic, 544 Knights Ave., Gahanna, Ohio 43230
Filed June 29, 1972, Ser. No. 267,463
Int. Cl. F16k *7/06*
U.S. Cl. 251—9 17 Claims



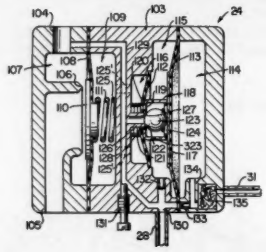
The invention contemplates a hose clamp comprising an elongate channel frame with opposed upstanding side walls from which a compression drum is pivotally suspended. The hose-compression surface of the drum is arcuate and generally cylindrical, and the pivot axis is substantially diametricily opposed to the circumferentially central region of the generally cylindrical surface. An integral handle brings the drum to a dead-center relation in proximity with the channel bottom, at the clamped position, and in a preferred arrangement two corner edges formed in the channel bottom serve to stabilize the clamped position and to effect a double-seal closure of the hose in such position.

3,813,078

OVEN CONTROL SYSTEM AND PARTS THEREFOR ON THE LIKE

Charles D. Branson, Greensburg, and Francis S. Genbauffe, Irwin, both of Pa., assignors to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 93,540, Nov. 30, 1970, Pat. No. 3,703,988.
This application Sept. 15, 1972, Ser. No. 289,285
Int. Cl. F16k *31/385*
U.S. Cl. 251—28 5 Claims



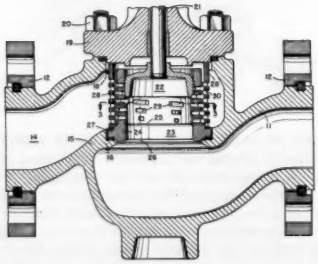
A fuel control system for an oven having a source of fuel and main burner means. A pneumaticaly operated main valve is utilized for interconnecting the source to the burner when the main valve is actuated and for disconnecting the source from the main burner when the main valve is deactuated. A manually settable and thermostatically operated valve is provided for interconnecting a pneumatic control signal to the main valve to actuate the same when a temperature effect of the burner is below a set temperature effect and for disconnecting the pneumatic control signal from the main valve to deactuate the same when the temperature effect of the burner is above the set temperature effect, the thermostatically operated valve having a manually settable construction for controlling the cooking temperature effect of the burner and having a modifying construction for modifying the manually settable construction for controlling a burnoff cleaning temperature effect of the burner.

3,813,079

QUICK CHANGE APPARATUS FOR EFFECTING GAS FLOW PRESSURE REDUCTION WITH LOW NOISE GENERATOR

Hans D. Baumann, Foxboro, and Gareth Allan Keith, Needham, both of Mass., assignors to Masoneilan International Inc., Norwood, Mass.

Filed Dec. 10, 1971, Ser. No. 206,700
Int. Cl. F16k *47/00*
U.S. Cl. 251—127 9 Claims



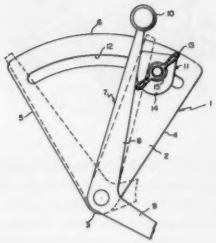
Valve controlling gaseous flow without producing excessive noise. A plurality of multi-perforated, quick change trim cylinders effecting at least two stage pressure reduction. Adjacent of the cylinders having predetermined flow area ratios, and the inner cylinder being invertible to extend, and enclose the valve plug, to either side of the seat.

3,813,080

METHOD AND DEVICE FOR CONTROLLING A MULTI-POSITION VALVE

Kenneth Mathew Rogers, No. 15, Salisbury Dr., Logan Pk., Hatfield, Salisbury, Rhodesia

Filed Oct. 4, 1972, Ser. No. 295,046
Int. Cl. F16k *51/00*; G05g *5/04*
U.S. Cl. 251—285 5 Claims



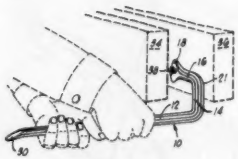
A device and method for controlling a multiposition valve to regulate flow from a spray mechanism, which involves positioning a stop means in the path of movement of a valve actuating lever and which stop means provides two predetermined stop positions of the lever which can be selected alternatively or sequentially.

3,813,081

CARPENTER'S TOOL

Carl E. Alger, Oklahoma City, Okla., assignor to Oklahoma Tool & Supply Company, Oklahoma City, Okla.

Filed Sept. 14, 1970, Ser. No. 71,853
Int. Cl. B66f *3/00*, *15/00*
U.S. Cl. 254—131 1 Claim

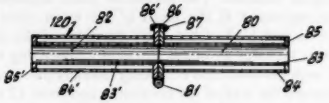


A carpenter's tool to be used primarily for pulling nails, wherein the tool is of one-piece construction having an elongated body portion or handle extending in what may be considered a first plane, a first extension on one end of the handle extending at slightly less then 90° from the handle and extending is the same plane as the handle, a second extension on the first extension extending at an angle of between zero and ninety degrees from the first plane, and a wedge-shaped claw portion on the end of the second extension shaped to form a fulcrum at the transition between the claw portion and the second extension, whereby the claw portion may be inserted in virtually unaccessible locations for pulling nails and the desired leverage is provided.

3,813,082
COMBINED MIXER, KNEADER AND PRESSER PARTICULARLY FOR FOOD PROCESSING

Josef Manser, Uzwil, Switzerland, assignor to Gebrueder Buhler AG, Gallen, Switzerland

Filed Nov. 14, 1972, Ser. No. 306,204
Claims priority, application Switzerland, Nov. 18, 1971, 16837/71
Int. Cl. B01f 7/08
U.S. Cl. 259—6 19 Claims



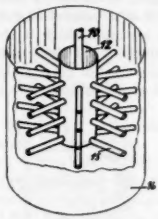
A combined mixer, kneader and presser for materials particularly for foods such as pasta comprises a housing having a wide diameter mixing portion, a small diameter pressing portion and an intermediate conical kneading portion connected between the mixing portion and the pressing portion. An inlet for the materials to be treated is connected into the mixing portion and the pressing portion has a free end with a discharge which receives a head carrying a press mold through which the material is directed. A driving motor has a driving transmission connected to the free end of the mixing portion of the housing and a single shaft extends through the housing and is connected to the driving transmission and is rotated thereby. The shaft includes a mixing portion having radially extending arms which rotate in the mixing portion of the housing, a kneading portion with a conical core and a kneading screw and a smaller diamter cylindrical pressing portion with a press screw which rotates in the pressing portion of the housing. The pressing portion advantageously comprises a separate shaft element which is received in the hollow interior of the portion making up the mixing shaft and the kneading portion of the shaft. The housing is formed with a door either at the drive end of the mixing portion or at the opposite end adjacent the intermediate conical kneading portion. The door includes a fixed part which is connected to the drive and a movable hinge part which may be swung outwardly from the fixed part. In the one embodiment the swinging part includes all of the housing parts which may be swung openly from a fixed mounting of the housing adjacent the drive end. In the other embodiment the swingable parts include the conical intermediate portion and the pressing portion of the housing. When the door is swung open the individual housing parts are accessible for cleaning and repair.

3,813,083
FLUID PROPELLER

Jean Risse, Grand Duchy of Luxembourg, Luxembourg, assignor to Colortex S.A., Luxembourg City, Luxembourg

Filed Mar. 9, 1972, Ser. No. 233,268
Claims priority, application Luxembourg, Mar. 15, 1971, 62793; Oct. 5, 1971, 64009
Int. Cl. B01f 5/10
U.S. Cl. 259—8 11 Claims

Apparatus for propelling any type of liquids which comprises in a container at least one motor shaft and one essentially central entry constituted by at least one entry collector having the shape of a hollow cylinder including one opening at one side and a bottom essentially closed on the other side, and holes disposed in at least one row concentric to the motor shaft in which are fixed a plurality of conduits preferably individual and closed, except at their extremities. The space or inner volume of one whole single row of conduits occupies a space or volume inferior to 33% of the space or volume comprised between two surfaces located tangentially to and fro of the conduits of the aforesaid row of conduits, and delimited by the peripheral extremities of the latter, excluding the space or volume of said hollow cylinder comprised between two

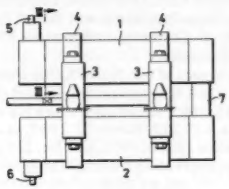


aforesaid surfaces, and wherein said cylinder occupies a space or volume approximately equal to the space or volume of the row of conduits.

3,813,084
VIBRATING DEVICE WITH A HEAT INSULATED TREATMENT CHAMBER, PARTICULARLY A VIBRATING MILL

Jurgen Langmaack, Niederkassel, and Helmut Haas, Cologne, both of Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne, Germany

Filed Dec. 15, 1971, Ser. No. 208,291
Claims priority, application Germany, Dec. 24, 1970, 2063688
Int. Cl. B01f 11/00
U.S. Cl. 259—72 10 Claims



In a vibrating device provided with a treatment chamber surrounded by a heat insulating jacket, the heat insulating material of this jacket is surrounded by a solid outer jacket, for instance made of plastic, and this outer jacket is rigidly connected by solid connecting members with the outer circumference of a tube the interior of which forms said treatment chamber.

The connecting members may comprise radial tongues bent inwardly from said outer jacket or straps wrapped around said tube and attached with their ends to said solid outer jacket or thin discs arranged in the space between the inner wall of said solid outer jacket and the outer wall of said tube. The discs are provided with a plurality of circular series of apertures to reduce the heat conductivity of the discs.

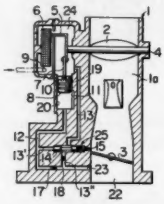
3,813,085
ARRANGEMENT FOR REGULATING A CHOKE VALVE IN A CARBURETOR

Masahiko Nakada, and Hirofumi Matsumoto, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan

Filed Feb. 26, 1973, Ser. No. 335,697
Claims priority, application Japan, May 20, 1972, 47-49545
Int. Cl. F02m 1/10
U.S. Cl. 261—39 B 8 Claims

In the mixing chamber of a carburetor a choke valve is spaced axially from a throttle valve. The carburetor includes a

hot air chamber to which hot air heated by exhaust gas is admitted. Positioned within the hot air chamber is a bimetallic coil which, in response to the temperature of the hot air heated by exhaust gas, operates the choke valve. Communicating with the hot air chamber is a cylindrically shaped chamber containing a piston which is also displaced by the bimetallic coil as it operates the choke valve. On the opposite side of the piston from the hot air chamber, the cylindrically shaped chamber also communicates with the mixing chamber



adjacent the throttle valve so that a negative pressure within the mixing chamber tends to displace the piston in the same direction that it is moved as the choke valve is opened. The side of the cylindrically shaped chamber in communication with the mixing chamber is connected through a valved passage to the hot air chamber so that differences in pressure on the opposite sides of the piston can be balanced during idling before the engine associated with the carburetor warms up.

3,813,086

DEVICE FOR AERATING LIQUIDS

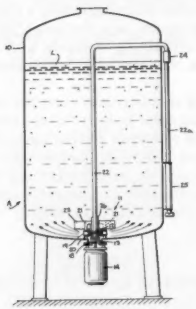
Heinrich Ebner, Bonn-Ippendorf, and Anton Enenkel, Bonn-Roettgen, both of Germany, assignors to Firma Heinrich Frings, Bonn, Germany

Continuation-in-part of Ser. No. 828,695, May 28, 1969, abandoned, which is a continuation-in-part of Ser. No. 640,618, May 23, 1967, abandoned, which is a continuation-in-part of Ser. No. 625,232, March 22, 1967, abandoned. This application June 5, 1972, Ser. No. 259,693

Claims priority, application Austria, Apr. 5, 1966, 3217/66

Int. Cl. B01f *3/04*

U.S. Cl. 261—93 **11 Claims**



A self-aspirating device for the aeration of liquids with atmospheric pressure air, and especially suited for use in tanks or like containers of large diameter and height, is disclosed. The device includes a hollow rotor and a surrounding stator, both mounted in the container near the bottom thereof. The rotor is supported by a relatively short extended motor shaft entering the container through the bottom thereof via a mechanical seal and connected with a high speed motor located directly below the container. The interior of the rotor is in communication with the ambient atmosphere via a stationary air intake pipe extending upwardly from the middle of the rotor and connected thereto in a liquid-tight manner with the aid of a labyrinth packing. The rotor has from 4 to 8 circumferentially spaced lateral vanes which may be rectilinear or curvilinear in outline, each vane being defined by two horizontal top and bottom surfaces and an intermediate vertical surface oriented non-radially away from the direction of rotation of the rotor, so that each vane is closed at its leading side facing in the direction of rotation and provides a vertical air outlet opening at its trailing side facing away from the direction of rotation. The maximum outer diameter of the rotor as measured at the locus of the outer vane edges is between ⅛ and 1/15 of the inner diameter of the container. The stator includes an upper ring and a lower ring both concentric with the rotor and extending laterally outwardly of the latter toward the wall of the container, and from 12 to 36 vertical guide plates disposed between the rings and inclined non-radially of the rotor in the direction of rotation of the latter, the locus of the innermost edges of the guide plates, as well as the inner edges of the stator rings, being at a 0.5 to 3 mm spacing from the locus of the outer edges of the rotor vanes. The aerating device according to this invention is able to aspirate as much as 2,400 to 3,000 cbm of air per hour against the pressure of a 4 m high liquid column with very moderate power consumption, and to provide air bubbles of the finest size uniformly distributed in the liquid so as to lead to an extremely high quality of the aeration. This abstract is not to be taken as a complete exposition or as a limitation of the present invention, however, the full nature and extent of the invention being discernible only by reference to and from the entire disclosure.

3,813,087

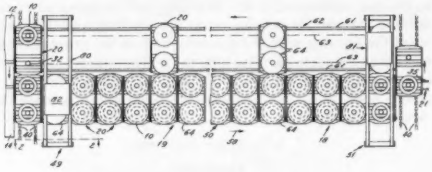
COOLING SYSTEM FOR ROD OR BAR COILS

Walter G. Boehm, Birmingham, and Gordon A. Torrance, Riverview, both of Mich., assignors to Jervis B. Webb Company, Detroit, Mich.

Filed Oct. 2, 1972, Ser. No. 294,359

Int. Cl. C21d *9/52*

U.S. Cl. 266—2 A **20 Claims**

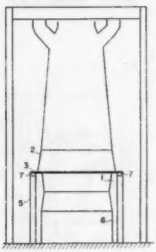


A system for the cooling of annular coils of rod or bar includes a plurality of coil carriers movable by a conveyor between coil loading and unloading stations, each coil carrier having a bed which supports one end of a coil with the axis of the coil annulus extending perpendicular to the bed and which permits the circulation of air through the bed to the central space of a coil annulus during passage of the coil carriers through a cooling zone. A plurality of coil covers are provided, and cover handling apparatus located at coil covering and uncovering stations preceding and following the cooling zone is capable of placing a cover on the other end of a carrier supported coil at the covering station, the cover extending across the central space of the coil annulus, and of removing the cover at the uncovering station. Covers removed are returned to the covering station either on empty coil carriers returning to the loading station or on an auxiliary conveyor having carriers circulating between the covering and uncovering stations.

3,813,088
FURNACE BODY SUPPORTING STRUCTURE FOR BLAST FURNACES

Nobuo Miyajima, 107, Sakurahonmachi, Minama-ku, Nagoya; Kozo Kaneko, 7-1-406, Higashiyamada, Hukishima-cho, Tokai; Iwao Ohnuki, 5-12-102, Miyazu-Shinkaizan, Aguicho, Chita-gun, Aichiken, and Noboru Okubo, 119-44, Aza-Kamiwashibetsu, Noboribetsu-cho, Horobetsugun, Hokkaido, all of Japan

Filed Dec. 27, 1971, Ser. No. 211,923
Int. Cl. C21b 7/00
U.S. Cl. 266—25 12 Claims

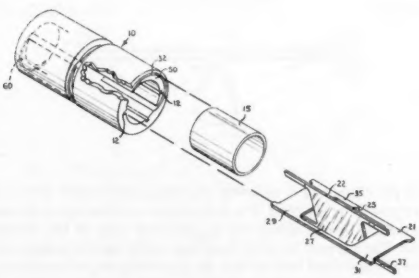


A furnace body supporting structure for blast furnaces comprising a plurality of supporting columns arranged along the outer periphery of the furnace body and resilient bodies on the supporting columns or on beams fixed to the supporting columns and interposed between the supporting columns and a ring plate installed on the bottom of a furnace shaft or between beams and brackets installed on the furnace shaft to absorb the weight of the furnace body, and thrust blocks fixed between the ring plate and supporting columns or between the brackets and beams respectively to prevent the horizontal movement of the furnace body.

3,813,089
ECCENTRIC FLEXURAL PIVOT

Henry Troeger, Cooperstown, N.Y., assignor to The Bendix Corporation, Teterboro, N.J.

Filed Sept. 8, 1972, Ser. No. 287,299
Int. Cl. F16g 1/22
U.S. Cl. 267—160 5 Claims

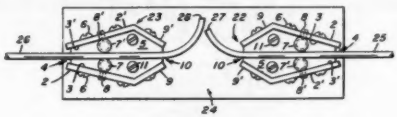


A flexural pivot device having first and second housing means arranged on a common axis and being axially spaced from each other, the first housing means having an inwardly projecting arcuate structure disposed eccentric to the common axis, the arcuate structure extending axially into the second housing means and being radially spaced therefrom, a second housing means having inwardly projecting arcuate structure disposed eccentric to the common axis and being diametrically disposed relative to the arcuate structure of the first housing means, the arcuate structure of the second housing means extending axially into said first housing means and being radially spaced therefrom, and cross flat spring means connecting said arcuate structures so that said first and second housing means are rotatable relative to each other on the common axis.

3,813,090
CLAMP

Anthony Merola, Pittsburgh, Pa., assignor to Amerola Products Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 825,369, May 16, 1969, Pat. No. 3,653,708. This application Nov. 10, 1971, Ser. No. 197,225The portion of the term of this patent subsequent to Apr. 4, 1989, has been disclaimed.
Int. Cl. B25b 1/04; A44b 21/00
U.S. Cl. 269—217 10 Claims

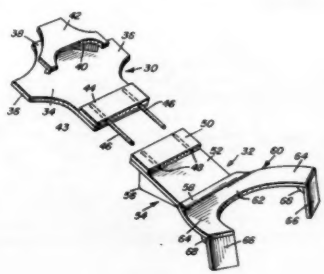


A clamp which provides a secure grip upon a workpiece. The clamp has a frame and a pair of spaced plate members which form confronting, converging roller surfaces. Friction rollers, one associated with the roller surface and resiliently secured thereto so that the distance between the rollers may be enlarged to engage the object to be clamped, but will securely hold the object against removal from the grip of the rollers if forces are extended in the direction of convergence of the roller surfaces. The use of two adjacent such clamps, with the roller surfaces of each clamp converging in a different direction provides a junction for wires or other objects, and acts as a splicing unit.

3,813,091
COUCH

Harold M. Metzger, Rt. 4, Box 3, Greenville, Ala. 36037

Filed Sept. 7, 1972, Ser. No. 287,155
Int. Cl. A61g 13/00
U.S. Cl. 269—322 8 Claims



A knockdown couch embodying a pair of elongated upholstered half-sections having coplanar abutting surfaces separably and connectively joined by a pair of parallel male pins telescopingly fitted into oriented female sockets which are provided therefor. The respective half-sections are expressly designed and contoured to provide a comforting and restful couch for a recumbent occupant who, for example, may be called upon to assume changeable postural positions while undergoing a gynecological examination, while receiv-

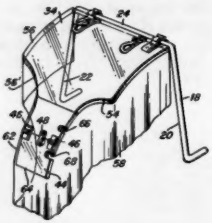
ing a treatment for sterility, for post-operative support in cases requiring elevation of the pelvis, and for body support while consummating an act of marital union.

3,813,092

SHIELD FOR DOWNWARDLY DIVERTING EXHALED GASES FROM ANESTHESIOLOGIST

Beatrice D. Foster, 8191 Colony Dr. Apt. 1., Wyandotte, Mich. 48138

Filed Sept. 12, 1972, Ser. No. 288,341
Int. Cl. A61g 13/00
U.S. Cl. 269—322 11 Claims



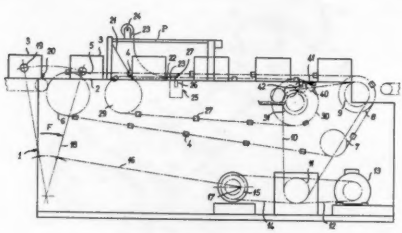
A transparent arcuate panel including anchor structure at one end thereof for attachment to an elevated member extending transversely of the head end portion of an operating table. The other end of the arcuate panel curves downwardly and is engageable with the extendible head piece or rest of an associated operating table. The side edge portions as well as the other end edge of the panel include depending flexible and transparent marginal skirt portions and the panel and skirt portions serve to entrap gases exhaled by children while administering anesthesia to the children with a non-rebreathing valve. The exhaled gases are diverted downwardly by the panel and skirt and thereafter fall to the floor of the operating room.

3,813,093

DEVICE FOR INSERTING BOOKMARKS INTO BOOKS

Jean Marie Taupin, Paris, France, assignor to Rahdener Maschinenfabrik August Kolbus, Rahden, Germany

Filed Feb. 1, 1972, Ser. No. 222,610
Claims priority, application France, Feb. 2, 1971, 71.03430
Int. Cl. B65h 5/30
U.S. Cl. 270—55 4 Claims



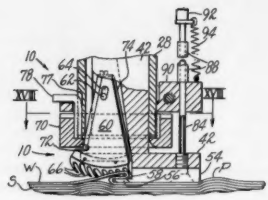
This device for inserting bookmarks into books travelling on a conveyor comprising spaced transverse lugs for driving the books separately is equipped with a blade for opening each book, which is disposed on the path of the travelling books, and, downstream of said blade, a channel delivering ribbon from a supply spool and a cutter disposed also downstream of said blade for severing each bookmark from the ribbon; means are provided in the form of spring-loaded clamps for picking up and pulling the ribbon in synchronism with the book conveyor, said clamps co-acting with cam means disposed on the one hand at the outlet of said channel and on the other hand at a point farther downstream, for opening and reclosing said clamps on the ribbon and release the bookmark in the book after it has been severed from the ribbon, respectively.

3,813,094

MECHANISM FOR TRANSFERING FLEXIBLE WORK PIECES

Richard R. Walton, Boston, and George E. Munchbach, Roslindale, both of Mass., assignors to USM Corporation, Boston, Mass.

Filed June 6, 1972, Ser. No. 260,305
Int. Cl. B65h 3/22
U.S. Cl. 271—19 15 Claims



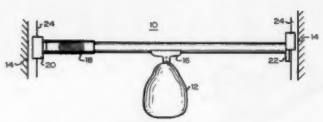
Machines for feeding fabric sheets singly from a stack. Ply disengaging means float lightly with the top ply, as when the ply is indented by a pressing foot, and move laterally to disengage the ply and to nip the top ply. A cam actuatable pawl construction and a slide construction of pick up devices are shown. Rapid movements are shown to enhance the various steps in the cycle.

3,813,095

PUNCHING BAG AND MOUNT THEREFOR INCLUDING AUTOMATIC SPRING RETURN FOR THE PUNCHING BAG

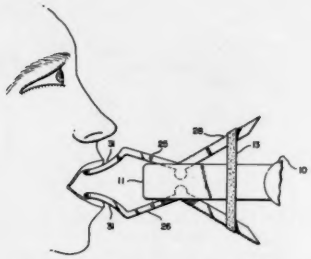
Leo E. Long, 745 Casita Way, Los Altos, Calif. 94022

Filed Sept. 5, 1972, Ser. No. 286,007
Int. Cl. A63b 69/24
U.S. Cl. 272—78 7 Claims



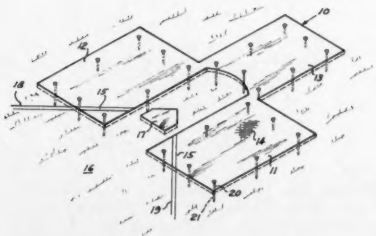
A punching bag is mounted on a support member that is in turn pivotally mounted in a slotted tube and limited to pivotal movement solely about the longitudinal axis of the slotted tube. The support member is spring loaded against a stop portion of the slotted tube so that the punching bag will automatically snap back directly to its normal rest position each time it is struck. A length adjustment member may be coaxially mounted at one end of the slotted tube to adjust the over-all length of the slotted tube so that a pair of door frame engaging members mounted at the outer end of the length adjustment member and at the other end of the slotted tube may be employed to releasably mount the punching bag in a door frame. Alternatively, a pair of brackets may be mounted at opposite ends of the slotted tube so that the punching bag may be fixedly mounted on a wall.

3,813,096
ELASTIC FACIAL EXERCISER
Ralph E. Welch, 914 Winthorne Dr., Apt. D-26, Nashville, Tenn. 37217
Filed Feb. 21, 1973, Ser. No. 334,438
Int. Cl. A63b *23/00, 21/00*
U.S. Cl. 272—82 4 Claims



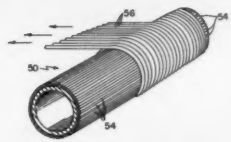
A specialized facial muscle exerciser including a handle and support device having elongated recesses on opposite side of the support device for receiving pivotal members. The support body portion includes semicircular recesses into which semicircular bearings on the pivotal members fit. An elastic band surrounds the two pivotal members, each having a portion designed to be received in the slots in the support body within the elastic band, and members which extend obliquely beyond the distal end of the support body, terminating in relatively broad, flat members adapted to comfortably receive the users lips. When the lip receiving portions are placed in the user's mouth and the muscles of the mouth are contracted to squeeze the members toward each other the opposite ends extend the elastic band, providing a resistive force to exercise the muscles. The pivotal body and the exterior of the support body are provided with ribbing to prevent the elastic band from slipping. The band can be moved longitudinally toward or away from the fulcrum to decrease or increase the effort needed to pivot the members.

3,813,097
BATSMAN BOX FOR A BASEBALL DIAMOND
Lloyd Claude Darby, 5966 Trinity Pl., Philadelphia, Pa. 19143
Filed Oct. 27, 1972, Ser. No. 301,343
Int. Cl. A63b *71/00*
U.S. Cl. 273—25 9 Claims



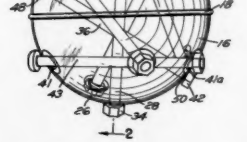
A batsman box surface made of hard automobile tire-like black rubber in official sizes is placed flush with the playing surface and staked in place. White foul lines are molded or added to the surface. The whole surface fits into the regulation 26 foot dirt circle when placed in alignment with the baseball field diamond boundaries. The batsman box comprises a pair of spaced apart generally oblong plate portions connected by a catchers plate located generally behind and between the batsman plates, all of the plates being located in a horizontal plane when placed for use on a conventional baseball diamond.

3,813,098
PRESTRESSED ELEMENTS
Herbert Corliss Fischer, and Herbert Corliss Fischer, Jr., both of 3 Sawyer Rd., Wellesley, Mass.
Division of Ser. No. 48,165, June 22, 1970, Pat. No. 3,631,897, which is a continuation-in-part of Ser. No. 856,901, Sept. 4, 1969, Pat. No. 3,533,203, which is a continuation of Ser. No. 617,583, Feb. 21, 1967, abandoned, which is a continuation-in-part of Ser. Nos. 388,416, Aug. 10, 1964, Pat. No. 3,208,838, and Ser. No. 464,309, June 10, 1965, Pat. No. 3,431,687, and Ser. No. 567,540, July 25, 1966, abandoned. This application July 7, 1971, Ser. No. 160,322The portion of the term of this patent subsequent to Oct. 13, 1987, has been disclaimed.
Int. Cl. A63b *59/06, 59/14*; F16l *9/14*
U.S. Cl. 273—72 R 11 Claims



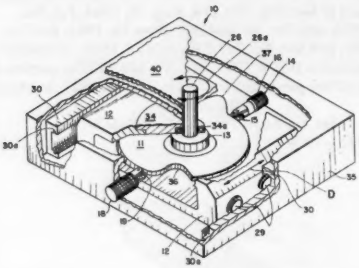
A stressed element having a relatively rigid, imcompressible body combined with one or more internal or external tensioning strands, each comprising a multiplicity of synthetic organic fibers such as nylon, polyester, polypropylene or the like, having a high recoverable stretch, the tensioning strands being maintained in intimate association with the rigid body and in highly elongated tensioned condition to compress the body and so stress the element.

3,813,099
SPHERE AND PINS ASSEMBLY PUZZLE
Gini Scott, 460 35th Ave., San Francisco, Calif. 94121
Filed Dec. 18, 1972, Ser. No. 316,381
Int. Cl. A63f *9/12*
U.S. Cl. 273—156 4 Claims



A puzzle game comprising a hollow sphere having a plurality of openings randomly formed therein, each of the openings being alignable with another opening, and a plurality of pins of predetermined dimensions, each of which is selectively inserted by a player through a pair of aligned openings wherein the puzzle is solved when the length of each pin as inserted through the aligned openings generally corresponds to the dimension of the chord line which is extended just beyond the outer surface of the sphere between the aligned openings.

3,813,100
CAM ACTION TANGENTIAL TRACKING TONE ARM PIVOT MECHANISM
Karl Arthur Meyer, 171 N. Atlantic Ave. Apt. 27, Western Springs, Ill. 32931
Filed Mar. 19, 1973, Ser. No. 342,824
Int. Cl. G11b 3/28
U.S. Cl. 274—23 A 5 Claims

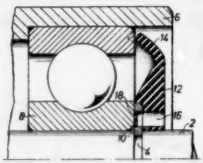


A cam action tangential tracking tone arm pivot assembly and more particularly an improved tangential tracking tone arm pivot assembly for phonographs, working on the principle of simultaneous rotation and linear motion of the pivot point to the correct geometric location. This is accomplished by a cam or camshaft to which the tracking tone arm is mounted and wherein said cam or camshaft is sensitively balanced to the prescribed tracking, by a movable and a fixed cam roller, and on the same plane by bearings or bushings for the least resistance to rotation.

3,813,101
PICKUP NEEDLE
Ernst Benz, Altweg 308, 7450 Andelfingen, Switzerland
Filed May 1, 1972, Ser. No. 249,687
Claims priority, application Switzerland, June 12, 1971, 8605/71
Int. Cl. G11b 3/46
U.S. Cl. 274—38 6 Claims

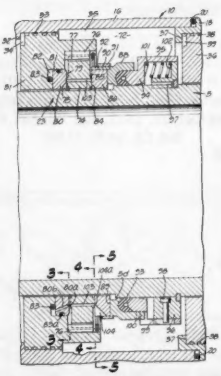
A pickup needle having a diamond tip soldered by a hard solder to a shaft. According to the invention the shaft is formed of a material selected from silicon carbide, boron carbide, corundum, quartz and glass having a melting point exceeding 800°C.

3,813,102
LOCKING AND SEALING RING
Karl Gustav Einar Derman, Partille, Sweden, assignor to Forsheda Ideutveckling AB, Varnamo, Sweden
Filed Mar. 29, 1972, Ser. No. 239,188
Claims priority, application Sweden, Nov. 12, 1971, 14476/71; Mar. 29, 1971, 4026/71
Int. Cl. F16j 15/32; F16c 33/78
U.S. Cl. 277—9 5 Claims



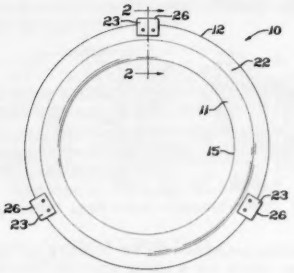
A locking and sealing device, especially for sealing between concentric surfaces while locking a bearing to at least one of the surfaces in which a ring element, preferably of metal, has a sealing element connected thereto with the ring element arranged for locking engagement with a cylindrical surface while the sealing ring sealingly engages the same surface and projects radially therefrom for sealing engagement with the other surface whereby a seal is established between the surfaces while a bearing engaging the cylindrical surface is locked in place by the ring element.

3,813,103
MECHANICAL SEAL WITH IMPROVED LEAKAGE CONTROL
Winfred J. Wiese, Whittier, Calif., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Apr. 12, 1972, Ser. No. 243,377
Int. Cl. F16j 15/44
U.S. Cl. 277—27 12 Claims



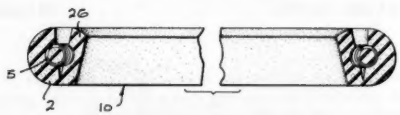
A mechanical seal assembly having a rotary sealing ring and a nonrotatable sealing ring carried by a housing and a rotary shaft and having opposed radial sealing faces. A back-up ring engages the nonrotatable sealing ring and has a marginal portion exposed in a pressure chamber in the housing, and the nonrotatable sealing ring and the back-up ring are ported to allow flow of fluid into the pressure chamber from between the rotary sealing ring and the nonrotatable sealing ring. The rotary sealing ring is notched at circumferentially spaced locations and has radial surfaces between the notches to intermittently open and close the ports in the nonrotatable ring. A number of such seal assemblies are arranged in tandem.

3,813,104
SEALING RING
Dean G. Smith, Troy, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.
Filed July 18, 1972, Ser. No. 272,801
Int. Cl. B65d 53/00; F16c 33/78
U.S. Cl. 277—94 6 Claims



A sealing ring having radially extending clips which may be deflected for insertion into a retaining slot in a surrounding supporting member. The clips resiliently urge the sealing ring into sealing contact with the surrounding member and resiliently hold the ring in a concentric position in the retaining slot.

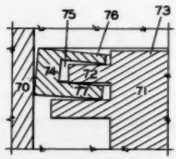
3,813,105
SEAL
Malcolm M. McQueen, 19430 Marilla St., Northridge, Calif. 91324
Filed Apr. 3, 1972, Ser. No. 240,703
Int. Cl. F16j 9/06
U.S. Cl. 277—164 4 Claims



The invention involves a "O" ring seal having embedded or bonded therein a spring or other member made of a material having a lower coefficient of expansion and higher modulus of elasticity than the material of which the seal itself is made, to thereby control and limit circumferential expansion and swelling of the seal when subjected to varying environmental and/or operating conditions.

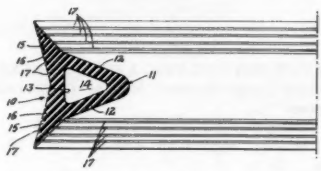
3,813,106
PISTON RING
Donald C. Hill, St. Louis, Mo., assignor to Eaton Corporation, Cleveland, Ohio
Division of Ser. No. 69,737, Sept. 4, 1970, which is a continuation-in-part of Ser. No. 865,593, Oct. 13, 1969, abandoned. This application June 27, 1972, Ser. No. 266,829
Int. Cl. F16j 9/20
U.S. Cl. 277—173 4 Claims

An internal combustion engine piston having a live headland ring whose cross-section is imbalanced by differentiating it from a circumscribing circle whose diameter equals the maximum diagonal dimension to exterior corner points (which, in the case of a ring having a blunted cover or tapered face, will be the virtual corner point) of the ring when free and unconfined, so that more material is omitted within the inner-upper and outer-lower quadrants than within the inner-lower



and outer-upper quadrants, or vice versa depending upon the sense in which torsional twist is desired when the ring is contracted to cylinder diameter.

3,813,107
GASKET SEAL BETWEEN SEWER PIPE AND MANHOLE OPENING
John Ditcher, Langhorne, Pa., assignor to A-LOK Corporation, Trenton, N.J.
Division of Ser. No. 127,520, March 24, 1971. This application Sept. 26, 1972, Ser. No. 292,424
Int. Cl. F16j 15/10; F16l 5/00
U.S. Cl. 277—189 6 Claims

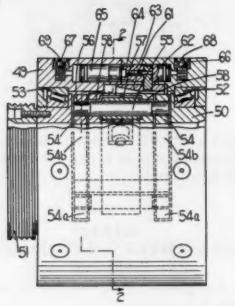


Providing a leakproof seal between the surface of an opening through the wall of a manhole and the outer surface of a pipe which passes through that opening. An extruded gasket strip, of elastomeric material and of "A" section, is rooted, by the splayed legs of the "A," in the concrete of the manhole wall around said opening. The upper portion of the "A" yieldingly spans the distance between the surface of the opening and the surface of the pipe. A shaping element is provided to define the shape and character of the surface of the opening and to securely hold the gasket strip while the concrete is being poured to form the manhole wall, and until it has set.

3,813,108
WORKPIECE HOLDERS
Alfred Ernest Sykes, 329 Leicester Rd., Markfield, England
Division of Ser. No. 31,151, April 23, 1970, Pat. No. 3,685,844. This application May 12, 1972, Ser. No. 252,868
Claims priority, application Great Britain, Apr. 29, 1969, 21846/69
Int. Cl. B23b 31/16
U.S. Cl. 279—4 2 Claims

A workpiece holder in which a rotatable tubular body is positioned within an outer stationary tubular part, with the inner body being of resilient material and having a plurality of workpiece engaging members, a finger integrally connected at one end portion to the body and having an opposite free end portion circumferentially spaced from the end portion connected to the body, the free end portion forming a workpiece engaging member, the free end portion being adapted to flex relative to the body about the end portion of the finger integrally connected to the body for causing movement of the free end portion and workpiece engaging member in generally

radial directions with respect to the axis of rotation of the body, and a pivoted arm connected to the finger and an axially



movable tapered ring cooperable with the arm for effecting pivotal movement of the arm for applying a force to flex the free end portion of the finger.

3,813,109

DEVICE FOR SECURING A BOOT TO A SKI

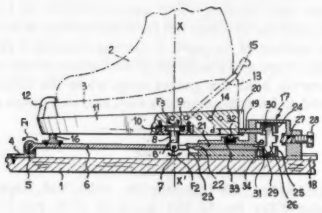
Georges Pierre Joseph Salomon, 34, Ave. de Loverchy, Annecy, France

Filed Mar. 15, 1972, Ser. No. 234,933

Claims priority, application France, Mar. 18, 1971, 71.09519

Int. Cl. A63c *9/08*

U.S. Cl. 280—11.35 Y **15 Claims**



A device for securing a boot to a ski includes a support member disposed between the ski and a sole-element of the boot; one end of the support member is pivotally mounted to the ski to provide a displacement of the boot in a plane perpendicular to the plane of the ski, and the other end of the support member is releasable to allow this displacement. First hinge means connect the support to the sole-element and allows the boot to pivot about an axis perpendicular to the boot. Second hinge means connect the first hinge means to the support member and include a pivot axis transversely extending of the ski, the pivot axis of the first and second hinge means being in constant perpendicularity.

3,813,110

ADJUSTING MECHANISM FOR THE RETAINING SPRINGS OF SAFETY SKI BINDINGS

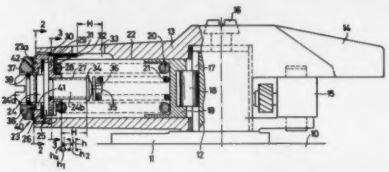
Brigitte Sittmann, Stuttgart, Germany, assignor to Vereinigte Baubeschlagfabriker Gretsch & Co., GmbH, Leonberg, Germany

Filed Jan. 19, 1973, Ser. No. 325,061

Claims priority, application Germany, Jan. 20, 1972, 2202541

Int. Cl. A63c *9/00*

U.S. Cl. 280—11.35 T **29 Claims**



An adjusting mechanism for the retaining springs of safety ski bindings which use a spring abutment adjustable by a rotatable member and include means for changing the adjusting range adjustable by the skier; the rotatable member thereby carries or includes an adjustable abutment member adjustable within an adjusting range limited by counter-abutments relative to a support member while the abutment member together with the rotatable member or a counter-abutment member carrying the counter-abutments together with the support member is adjustable by normally inaccessible, additional adjusting means; the spring abutment secured against rotation relative to the support member is axially displaceably arranged by means of a thread provided on the rotatable member which itself is secured against axial rotation.

3,813,111

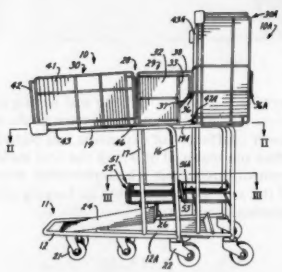
BUMPER CONSTRUCTION FOR SHOPPING CART

Verlyn C. Ruger, Bellevue, Mich., assignor to Roblin Industries, Inc., Battle Creek, Mich.

Filed Aug. 16, 1972, Ser. No. 280,985

Int. Cl. B62b *11/00*

U.S. Cl. 280—33.99 R **10 Claims**



A bumper system for a nestable shopping cart of the type having a wheeled lower frame, members upstanding from the lower frame near the rear end thereof, an upper frame carried by the upstanding members, a handle above and near the rear of the upper frame and a receptacle on the upper frame, the receptacle including a forward portion upwardly and rearwardly pivotable for nesting so that its bottom wall faces forwardly in opposition to the handle of a further similar cart nested in front thereof. The bumper system includes a transverse rear bumper member behind the rearmost of the upstanding members. A front bumper member is spaced for-

wardly of the upstanding members and has a pair of upstanding legs in forwardly spaced, overlapping relation with the rear bumper member. The spacing of the legs from the rear bumper member exceeds the horizontal spacing of the cart handle from the forwardly facing bottom wall of the receptacle portion positioned for nesting, so that nesting movement of the cart with respect to a further similar cart positioned in front thereof is stopped by contact between the opposed bumper members of the two carts and contact between the handle of the forwardly positioned cart with the forwardly facing bottom wall of the rearwardly positioned cart is prevented so as to avoid damage to such handle.

3,813,112

VEHICLE SHOCK ABSORPTION SYSTEM AND HIGH-PRESSURE GAS PRODUCING DEVICE THEREFOR

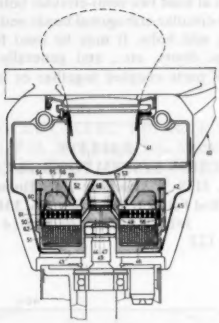
Gunter Hermann, Ottobrunn-Riemerling, Germany, assignor to Messerschmitt-Bo¹kow-Blohm gesellschaft Mit Beschrankter, Haftung, Germany

Filed Mar. 21, 1972, Ser. No. 236,712

Claims priority, application Germany, Mar. 27, 1971, 2114945

Int. Cl. B60r *21/08*

U.S. Cl. 280—150 AB **6 Claims**



A vehicle shock absorption system includes an inflatable casing which is inflated by a pressure-gas producing device when an accident-sensing device indicates that a collision is about to take place. The high-pressure fluid source comprises means for generating high-pressure gases rapidly and for directing them into the casing for inflating it. The gas generating device includes a housing in which there is located an ignitable charge having a rapid combustion rate which is ignited by an accident-sensing device to generate combustion gases which are directed first into association with a solid coolant and then through one or more nozzles for inflating one or more inflatable casings or bags which are adapted to hold a passenger against impact when a collision is likely to occur.

3,813,113

RETRACTION MECHANISM FOR A PROTRUDING PART OF A VEHICLE

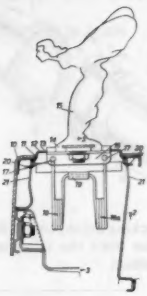
Horace James Burnham, Nantwich, England, assignor to The Secretary of State for Defence, London, England

Filed Mar. 12, 1971, Ser. No. 123,754

Int. Cl. B60r *27/00*

U.S. Cl. 280—150 R **7 Claims**

A retraction mechanism for protruding parts of vehicles such for instance as mascots, and comprises a toggle spring or springs connected between the part and the vehicle and arranged to retract the part when the part is struck with a predetermined force, thus avoiding possible damage to pedestrians.



3,813,114

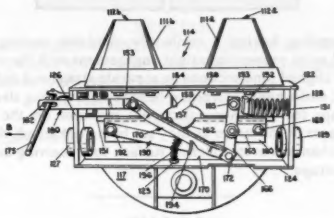
INVERTED FIFTH WHEEL COUPLER

Howard P. Berends, Fruitport, Mich., assignor to Holland Hitch Company, Holland, Mich.

Filed May 30, 1972, Ser. No. 257,590

Int. Cl. B62d *53/12*

U.S. Cl. 280—434 **16 Claims**



A fifth wheel employing a single control handle for unlocking the locking jaws of the fifth wheel and cocking a kingpin tripping mechanism, is mounted in an inverted position on a vehicle to be towed. A kingpin is mounted to a flat surface of a towing vehicle such that the kingpin can be coupled in locked engagement with the inverted fifth wheel.

3,813,115

PLASTIC PIPE THRUST RESISTANT JOINT

David Walter French, Denison, Tex., assignor to Johns-Manville Corporation, Greenwood Village, Colo.

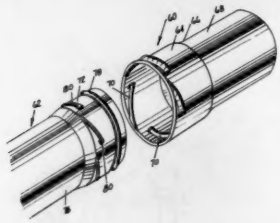
Filed Oct. 27, 1972, Ser. No. 301,552

Int. Cl. F16l *15/00*

U.S. Cl. 285—92 **9 Claims**

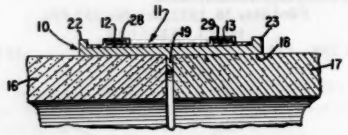
A bell and spigot joint for connecting two pipes together is disclosed herein. The joint, which is especially suitable as a thrust resistant joint, includes a bell end having at least one helical groove or at least partially helical groove integrally formed at least partially around its internal surface and a spigot having at least one outwardly protruding and at least partial helical rib integrally formed around its external surface. The rib is adapted to cooperate with the aforementioned

helical groove for connecting the bell end and spigot together in a reliable threaded fashion. In addition, the bell and spigot



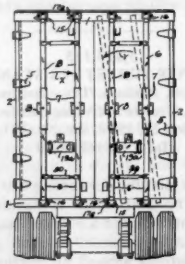
joint includes a locking arrangement for securing the bell end and spigot together once the latter are joined in the aforestated threaded fashion.

3,813,116
COUPLING FOR PLAIN END PIPES
William J. Horsley, La Canada, Calif., assignor to Interspace Corporation, Parsippany, N.J.
Filed Oct. 17, 1972, Ser. No. 298,343
Int. Cl. F16l *21/00*
U.S. Cl. 285—236 **3 Claims**



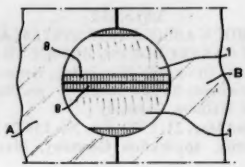
A coupling having a resiliently yieldable sealing sleeve adapted to be pressed into tight engagement with the end portions of aligned pipe sections by separate straps and tightening devices, and a band interposed between the sealing sleeve and the straps for alleviating frictional restraint on the sliding movements of the straps as they are being tightened, the band having channels in its exterior surface for receiving and seating the straps.

3,813,117
TRANSPORT MERCHANDISE CONTAINER
Thomas P. Hackney, Jr., and George B. Kirwan, both of Huntington, W. Va., assignors to Hennessy Products Incorporated, Chambersburg, Pa.
Filed Jan. 3, 1972, Ser. No. 214,690
Int. Cl. E05c *3/04, 7/00, 19/18*
U.S. Cl. 292—54 **5 Claims**



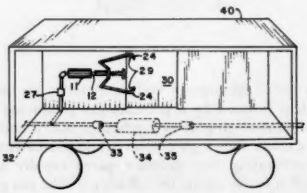
Transport merchandise container end framing, door and associated structure facilitating tight door closing and locking and resisting racking of the container framing by forces to which the container is subjected while being transported or, if a separable structure, when it is lifted onto or off of a barge, truck, railway car or other carrier.

3,813,118
ROTATABLE CATCH
Michel Liber, Paris, France, assignor to Seilib, Paris, France
Filed June 27, 1972, Ser. No. 266,733
Int. Cl. E05c *3/04, 7/04*
U.S. Cl. 292—54 **2 Claims**



The invention makes it possible to reduce the number of parts required for the production of a rotatable catch in which no pivot is provided. A rotatable catch according to the invention comprises at least two semi-circular bolts each carrying at least two semi-circular orthogonal beads and two keeper housings receiving said bolts. It may be used for the closure of boxes, casings, doors, etc., and generally for the locking together of all parts coupled together or in contact side by side.

3,813,119
PROTECTION SYSTEM FOR BOX CAR DOORS
James Panici, 3118 W. Hickory Rd., Homewood, Ill. 60430
Filed Feb. 22, 1973, Ser. No. 334,655
Int. Cl. E05b *51/02, 65/14*
U.S. Cl. 292—122 **2 Claims**

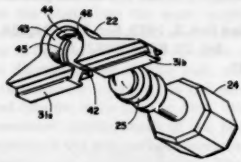


A latch system for box car doors comprising a pneumatic cylinder with suitable linkage to two metal arms with hooks formed at end. When air pressure is applied to cylinder, hooks unlatch. As air pressure is released, spring returns cylinder piston to original position, thereby latching doors closed.

3,813,120
SLIDING WINDOW LOCK
Donald V. Kelly, 10642 Helendale, Tujunga, Calif. 91042
Filed Dec. 22, 1972, Ser. No. 317,576
Int. Cl. E05c *5/04*
U.S. Cl. 292—251 **11 Claims**

A lock mechanism for sliding windows including a body portion which engages one track in the mullion of one of a pair of sliding window members and also including a screw member which advances out of the body and into engagement with a recess in the adjacent mullion of a second sliding window. The body and screw member are of preferably resilient plastic material such that the screw and body member may be

assembled merely by flexing the body member open. The screw member includes flat faced threads and angular root contours. The flat based threads engage a planar surface of the second mullion and a root surrounds a lip of the second mullion to provide a three point triangular engagement with the second window for secure locking. The body is elongated and includes a substantial length in interlocking relationship with the first mullion.



3,813,121

ARTICLE COLLECTING DEVICE

Stuart R. Marvin, P.O. 36 Winesap Ln., Monsey, N.Y. 10952

Filed Oct. 12, 1972, Ser. No. 296,911
Int. Cl. A47l 13/52
U.S. Cl. 294—1 R 10 Claims

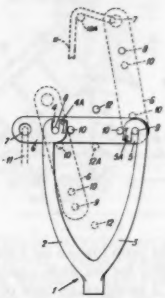
Disclosed is a scissor-like waste disposal device having handles at one end and blades at the other end. The blades have upstanding side walls which form a receptacle for waste upon assuming a closed position. One blade has a finger extending across the engaging blades to prevent waste between the blades from moving out of engagement. A plastic bag is provided secured to the pivot of the scissor and arranged to act as a shield in a first position and, in a second position, to be pulled over and secure therewithin the waste and the blades. To this end a twist wire is affixed within the marginal end of the bag at its opening.

3,813,122

DEVICE FOR PASSING A LINE AROUND AN OBJECT

Anthony Charles Wemyss, 12 Haydn, Purley, England

Filed Nov. 16, 1972, Ser. No. 307,247
Claims priority, application Great Britain, Nov. 16, 1971, 53176/71
Int. Cl. B63b 21/04
U.S. Cl. 294—19 R 17 Claims



A device comprising a two-armed fork element and a shuttle element which can pivotally engage both arms and swing about either of them in opposite directions so that a line carried by the shuttle element can be passed around a remote object such as a mooring ring.

3,813,123

EXTRUDED PLASTIC CONTAINER CARRIER

Ronald Charles Owen, Harwood Heights, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed May 11, 1972, Ser. No. 252,172
Int. Cl. B65d 71/00
U.S. Cl. 294—87.2 10 Claims

Multiple container carriers comprising ribbons of greater vertical than horizontal measurement being formed of plastic material that has been extruded and fused in the molten or semi-molten state.

ERRATA

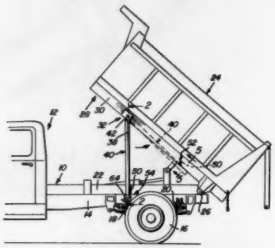
For Classes 297—191, 297—231, 297—335, 297—353 and 297—396 see:
Patents Nos. 3,813,147 thru 3,813,151

3,813,124

SAFETY PROP FOR DUMP TRUCK BODIES

David H. Roland, Charlotte, N.C., assignor to J. A. Jones Construction Company, Charlotte, N.C.

Filed Dec. 27, 1972, Ser. No. 319,010
Int. Cl. B60p 1/04
U.S. Cl. 298—17 B 7 Claims



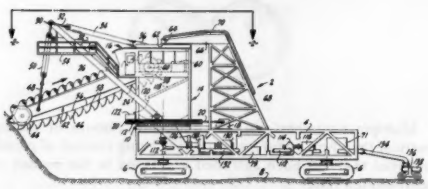
A safety promotion prop for use on a tiltably hinged dump truck body and adapted for use while equipment maintenance and servicing work is being taken care of by a mechanic or workman. It comprises a channel-shaped mounting fixture or bracket which is operatively bolted or otherwise mounted in a prescribed functioning position, that is, on the surface of a member of the underframe of a dump body. The open-bottom of the channel portion of this fixture (or bracket) embodies spaced flanges joined by a web portion. An elongated strut (leg or equivalent support) provides a prop and has an upper end pivotally bolted between the flanges. The other or lower end is free and the median portion carries a suitable chain which is adapted to be hitched to a fixed storing hook. A strut erecting, positioning and seating bracket is fixedly mounted on a prescribed surface of the usual sub-frame of the truck's chassis frame. This bracket has a depending mounting cleat whose upper end is provided with a laterally projecting U-shaped member, herein described as a stirrup, and which serves to receive and retentively seat the coacting end of the strut when serving as a prop.

3,813,125

METHOD AND APPARATUS FOR CONTINUOUSLY EXCAVATING PARTICULATE MATERIAL AND CONVERTING IT TO SLURRY

Wilbert Norman Sims, Alamo, and John A. Miscovich, Orange, both of Calif., assignors to Marcona Corporation, San Francisco, Calif.

Filed Nov. 22, 1972, Ser. No. 308,772
Int. Cl. E02f 3/94
U.S. Cl. 299—7 8 Claims



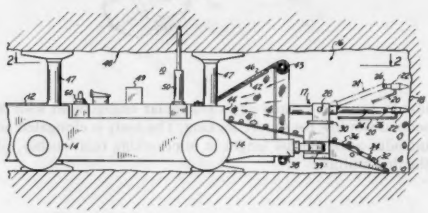
A continuously operating means excavates gravel, ore or a like particulate material from the earth and drops it onto an inclined grate having large openings. The grate retains rocks and other non-pumpable material, and the balance of the particulate material drops into a hopper fitted with a traveling water jet in the bottom thereof that converts the material within its vicinity to a slurry. The slurry flows from the hopper into a sump and is pumped by pump means from the sump through transfer conduits to a point of discharge.

3,813,126

CONTINUOUSLY OPERABLE UNDERGROUND MINING VEHICLE

Conrad O. Rogne, Jr., and Robert A. Grant, both of Ann Arbor, Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed Oct. 2, 1972, Ser. No. 294,424
Int. Cl. E21c 29/02, 35/22
U.S. Cl. 299—33 9 Claims



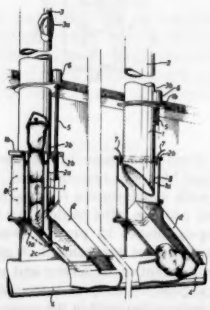
An underground mining vehicle that includes both tunnel roof supporting and rock cutting apparatus is illustrated herein. Hydraulic jacks are mounted on the main frame of the vehicle to rapidly provide temporary support for the roof of a tunnel over the vehicle. Apparatus for driving support bolts into the roof of the tunnel is disposed between the jacks to provide permanent support for the area over the main frame of the vehicle. A water jet nozzle is movably mounted in front of the vehicle main frame so that roof bolting and mining may be performed simultaneously. A shroud extends toward the tunnel walls and encloses the jet nozzle so that dust, methane, water vapor, and other gases produced during mining are isolated from the vehicle operator and the rest of the tunnel.

3,813,127

APPARATUS FOR THE INTERMITTENT TRANSFERRING OF PACKAGED REFUSE OR LAUNDRY ARTICLES

Sergio De Feudis, Nacka, Sweden, assignor to Aktiebolaget Svenska Flaktfabriken, Nacka, Sweden

Filed Apr. 24, 1973, Ser. No. 354,101
Int. Cl. B65g 53/04
U.S. Cl. 302—27 3 Claims



A system for pneumatically transferring material such as refuse, laundry, etc. which includes a plurality of vertical chutes into which the material is deposited. Means is provided

for collecting the material within the chute and periodically discharging the material from the chute. To this end, the lower end portion of the chute is formed as a valve cooperable with the main suction line, the end portion being vertically displaceable and having a beveled bottom end cooperating with a sloping wall forming an inlet into the main suction system. When the vertical chute is closed, the beveled end bears against the wall and retains the material within the chute. When the lower end portion is elevated, the material may discharge from the chute. To assist in the discharge of the material from the chute into the main suction channel, the inlet has a socket surrounding the end portion which is enlarged relative to the end portion of the chute so that when the chute bottom disengages the sloping wall, atmospheric air is permitted to flow into the inlet portion and assist the discharge of the material into the main suction duct. When the chute is closed by downward displacement of the bottom portion, a valving projection on the end portion operates to close the atmospheric opening into the inlet portion. The end portion of the chute is preferably operated periodically.

3,813,128

GARBAGE DISPOSAL SYSTEM

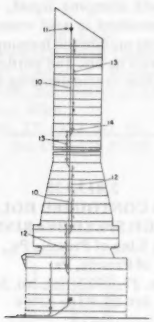
Per-Olof Ekstrom, Johanneshov, Sweden, assignor to AB Centralsug, Solna, Sweden

Filed Mar. 20, 1972, Ser. No. 236,479

Claims priority, application Sweden, Mar. 25, 1971, 3938/71

Int. Cl. B65g *53/40*

U.S. Cl. 302—39 **4 Claims**



An improved garbage disposal system for multi-story high rise apartment buildings and the like comprising a vertically disposed branch conduit extending through substantially the height of the building and dependently connected to a main conveying conduit for delivery of garbage thereto for transport to a remote location and a plurality of vertical garbage disposal chutes of limited extend each selectively serving a plurality of floors and including a selectively operable valve assembly at the dependent end thereof for effecting temporary accumulation of garbage therein and the selectively induced release and introduction thereof into the branch conduit.

3,813,129

ANTISKID CONTROL SYSTEM

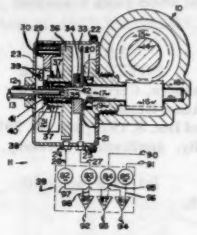
Samuel Shiber, P.O. 302, Des Plaines, Ill. 60018

Filed July 11, 1972, Ser. No. 270,710

Int. Cl. B60t *8/08*

U.S. Cl. 303—21 B **5 Claims**

A vehicular antiskid control system comprising an inertia wheel whose rotational speed represents a computed vehicle speed, driven by a shaft coupled to at least one of vehicle's wheels, through a one-way clutch, braking device to decelerate the inertia wheel in a deceleration which corresponds to vehicle's deceleration and device to divide the



shaft's rotational speed by the rotational speed of said inertia wheel and issues a command when the quotient is below a certain numerical value.

3,813,130

ANTISKID CONTROL SYSTEM

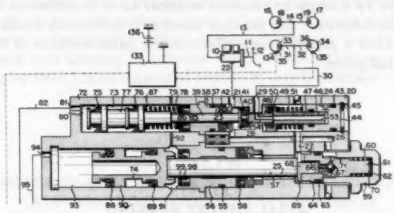
Masami Inada, Toyoake, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Filed Nov. 20, 1972, Ser. No. 307,761

Claims priority, application Japan, Dec. 27, 1971, 47/3535; Nov. 18, 1971, 46/92542

Int. Cl. B60t *8/06*

U.S. Cl. 303—21 F **6 Claims**



An antiskid control system includes a solenoid valve, computer and hydraulic pressure control means having a variable volume chamber defined by a piston and introduced with braking pressure fluid. Upon the suitable locking condition, the computer generates a signal to operate the solenoid valve, so that the piston is moved to cause the volume of the chamber to be large thereby releasing the locking condition.

3,813,131

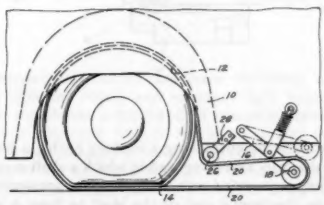
SNOW TRACTION DEVICE FOR MOTOR VEHICLES

Henry J. Suchcicki, 1202 Hollywood Dr., Reading, Pa. 19606

Filed Nov. 10, 1972, Ser. No. 305,442

Int. Cl. B62d *55/04*

U.S. Cl. 305—29 **1 Claim**



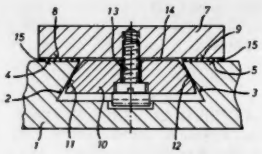
A pair of vehicle rear guide wheels is coupled by a pair of linkages to a corresponding rear side member extension. Each

linkage which is spring loaded and makes use of a shock absorber. A pair of endless cleated belts extend around and between each rear wheel guide wheel pair.

3,813,132
DOVETAIL GUIDE

Bernd Sahm, Nauborn, Germany, assignor to Firma Wilhelm Will KC, Nauborn, Germany

Filed Dec. 8, 1971, Ser. No. 205,885
Claims priority, application Germany, May 15, 1971, 2124228
Int. Cl. F16c 29/00
U.S. Cl. 308—3 A 3 Claims

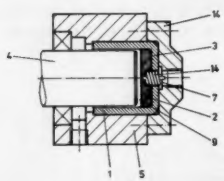


A metallic dovetail guide slideably receives a slide member made of a synthetic plastic material. The slide member is connected by a screw to an outer member so as to define an air gap therebetween and the slide member is sufficiently resilient to exhibit a pretensioning effect on the guide surfaces of the dovetail guide.

3,813,133
AXIAL THRUST BEARING

Lothar Walter, Schweinfurt, and Rainer Schurger, Arnstein, both of Germany, assignors to SKF Industrial Trading and Development Company N.V., Amsterdam, Netherlands

Filed Aug. 4, 1972, Ser. No. 277,984
Claims priority, application Germany, Aug. 9, 1971, 2139768
Int. Cl. F16c 17/16
U.S. Cl. 308—9 10 Claims

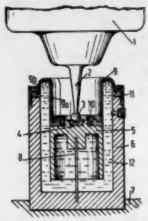


A thrust bearing comprising a bushing having a bottom, a cylindrical axially extending wall in which a shaft is received. The bushing is provided with an opening for pressurized fluid to bear on the frontal end of the shaft to form a pressure cushion. The wall of the bushing has a diameter larger than the shaft to provide an annular clearance over the length of the wall to increase the effective pressure cushion area.

3,813,134
VIBRATION DAMPERS

Petrus Leo Clemens Wijnant, Hertogenbosch, and Richardus Theodorus Gerardus Louwaard, Alkmaar, both of Netherlands, assignors to Reactor Centrum Nederland (Stichting), The Hague, Netherlands

Filed June 23, 1972, Ser. No. 265,506
Claims priority, application Netherlands, June 25, 1971, 7108778
Int. Cl. F16c 17/08
U.S. Cl. 308—156 5 Claims

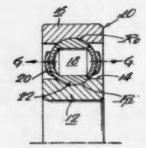


A vibration damper for a fast spinning body of revolution rotating about a vertical axis, said vibration damper comprising a vessel filled with damping liquid, a radially movable damping member contained in said vessel and immersed in said liquid and a curling membrane forming an end wall of said vessel and attached with its one end portion to said vessel and with its other end portion to said damping member.

3,813,135
SELF ORIENTING CONTOURED HOLLOW BALL FOR HIGH SPEED BEARING

Howard M. Martinie, King of Prussia, Pa., assignor to SKF Industries, Inc., King of Prussia, Pa.

Filed Feb. 27, 1973, Ser. No. 336,238
Int. Cl. F16c 33/64
U.S. Cl. 308—188 6 Claims



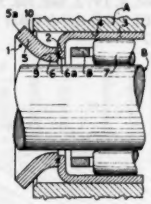
For a rolling bearing assembly comprising inner and outer rings having spaced apart raceways, a plurality of ball elements for the annular space between the raceways, at least one of said ball elements being hollow and including a circumferentially extending heavy wall zone section having a maximum wall thickness greater than the maximum wall thickness of diametrically opposed thin wall zone sections whereby upon operation of the bearing the ball element rotates about a predetermined fixed axis and the heavy wall zone section confronts the raceways at the point of maximum loading.

3,813,136

RADIAL NEEDLE BEARING ASSEMBLY

Alfred Pitner, Paris, France, assignor to Nadella, Malmaison, France, a part interest

Filed Aug. 11, 1972, Ser. No. 280,065
Claims priority, application France, Sept. 1, 1971, 71.31582
Int. Cl. F16c 33/00
U.S. Cl. 308—213 15 Claims



An assembly comprising a radial needle bearing having a cold-formed sheet metal outer bearing ring including a radial flange for axially retaining the bearing needles and an annular member which is integral with said radial flange and extends radially outwardly and covers and shields said radial flange.

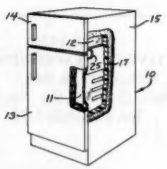
One portion of the annular member may be arranged to bear against a surface of a support which defines a bore in which said bearing is fitted so that the annular member also axially retains said bearing in said bore.

3,813,137

REFRIGERATOR CABINET

Charles G. Fellwock; Kenneth L. Hortin, and Harry L. Tillman, all of Evansville, Ind., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Dec. 27, 1972, Ser. No. 318,865
Int. Cl. A47b 81/00
U.S. Cl. 312—214 9 Claims



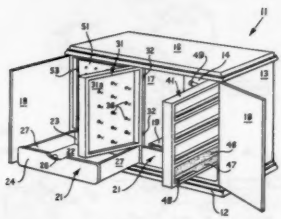
A refrigerator cabinet construction having an outer sheet metal shell for strength and rigidity, a thin relatively fragile liner body spaced therefrom to provide an insulation space and an adherent solid foam filling the space and adhered to the outer shell and, at spaced areas, to the liner body. The cabinet including the liner body is subject to extremes of thermal stress at localized areas which tend to rupture the fragile liner body but with these areas each having a layer of a parting agent such as a sheet of polymeric material between the liner body and the foam so that the foam does not adhere to the liner body and adheres only sparingly or not at all to the layers of parting agent with the result that extremes of stress at these localized areas are not applied to the liner body but to the yieldable layers of parting agent. The parting agent allows the foam insulation and the liner body to free themselves from each other if necessary because of expansion or contraction and to shrink or move independently, rather than be held tightly with a possible stress crack failure of the liner body.

3,813,138

JEWELRY ORGANIZING CABINET

Majorie T. Doohan, Windsor, Calif.

Filed Aug. 31, 1972, Ser. No. 285,212
Int. Cl. A47b 88/00
U.S. Cl. 312—309 2 Claims



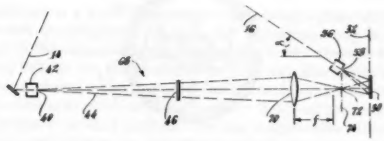
A cabinet, preferably matching bedroom furniture, has a pair of center-opening doors each opening a half cabinet, divided from the other by a vertical partition. On the bottom of each half is a drawer for certain items. Partitions which swing on vertical-axis hinges are provided on one or both sides with hooks, trays or apertures to hold various items of jewelry. The inside of the back of the cabinet has pegs to hang other items. Thus, each of the common types of jewelry is accommodated in a separate location which is easily accessible and readily visible and tangling of different items is avoided. Many items can be stored in an organized fashion in very little space.

3,813,139

IMAGE-PLANE CARRIER HOLOGRAM RECORDING SYSTEM USING SPHERICAL WAVEFRONTS

W. John Carlsen, New York, N.Y., assignor to General Telephone & Electronics Laboratories Incorporated, New York, N.Y.

Filed May 1, 1972, Ser. No. 248,956
Int. Cl. G02b 27/00
U.S. Cl. 350—3.5 1 Claim



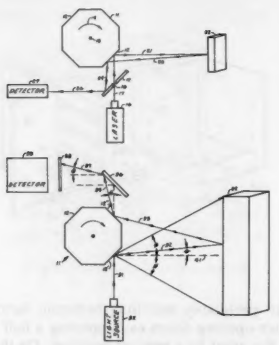
An image-plane carrier hologram recording apparatus utilizing coherent object and reference light beams having spherical wavefronts is described. In one embodiment, a pair of lenses is employed. One of the lenses images the object beam on a recording plane for interference with the spherical wavefront of the reference beam. The other lens focuses the object beam into a small point of divergence in a plane which also includes the point of divergence of the reference beam to effect cancellation of spherical components at the recording plane. In another embodiment a single lens image-plane hologram recording apparatus is described.

3,813,140

ROTATING PRISM SCANNING SYSTEM HAVING RANGE COMPENSATION

Ronald P. Knockeart, Walled Lake, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Dec. 13, 1971, Ser. No. 207,036
Int. Cl. G02b 17/00
U.S. Cl. 350—7 6 Claims



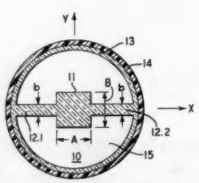
A scanning mechanism including a rotating prism and having a relatively flat response irrespective of range variations between the scanning system and the object scanned is described. The inventive system is also free of scanning radiation scatter problems and is easily aligned. These advantages are obtained by utilizing an interference filter in the detection path of the reflected energy and also by detecting reflected energy from a surface of the prism which is different from the transmitting surface.

3,813,141

SINGLE MATERIAL OPTICAL FIBER STRUCTURES INCLUDING THIN FILM SUPPORTING MEMBERS

Stewart Edward Miller, Locust, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 22, 1972, Ser. No. 308,833
Int. Cl. G02b 5/14
U.S. Cl. 350—96 WG 10 Claims



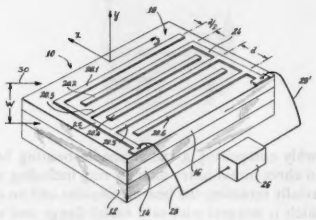
Optical fibers, for propagating optical radiation in guided modes, are fabricated in an integral structure. Advantageously, the fiber structure is made of a single filamentary material, such as fused silica, with a relatively large cross section at the central portion of the fiber and with a relatively thin film portion at the extremities of the fiber. The thin film portion serves as a supporting member for the central portion of the fiber. Such optical fiber structures are capable of propagating either single mode or multimode guided optical waves. In addition, the exposed surface of the central portion (which is not contacted by the thin film supporting member portion) can be contacted with an optically nonlinear material, in order to provide suitable interactions with the propagating signal wave energy and thereby to produce electrooptic effects such as amplification, modulation, or laser action.

3,813,142

ELECTRO-OPTIC VARIABLE PHASE DIFFRACTION GRATING AND MODULATOR

Carl F. Buhrer, Framingham, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Dec. 4, 1972, Ser. No. 312,071
Int. Cl. G02b 5/14; G02f 1/16
U.S. Cl. 350—96 WG 2 Claims



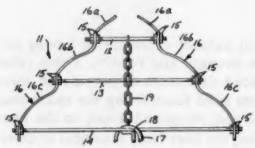
An electro-optic variable phase diffraction device is described for varying a phase diffraction grating and modulating an optical wave. A layer of electro-optic material whose index of refraction may be varied with an electric field is placed in interacting relationship with an optical wave passing through a thin-film optical waveguide. An array of parallel spaced electrodes whose widths are substantially more narrow than the width of the optical wave are so located over the optical waveguide to form longitudinal segments in the electro-optical material for interaction with different adjacent components of the optical wave. A controlled electrical energization of the electrodes causes a corresponding change of refractive index of underlying interacting segments to form a diffracted output optical wave whose intensity is modulated in correspondence with the electrical energization. Various embodiments and methods of modulation are described.

3,813,143

REFLECTIVE DEER WARNING DEVICE

Kenneth R. Hubbs, Rt. 1, Gary, S. Dak.

Filed Nov. 15, 1972, Ser. No. 306,520
Int. Cl. G02b 5/12
U.S. Cl. 350—97 12 Claims



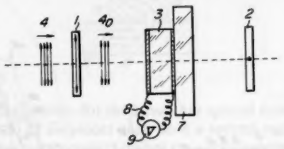
A light reflecting device for use adjacent highways and roadways to reflect the headlights of oncoming automobiles transversely away from the highway and thereby warn wild animals. The device includes a reflecting plate which is curvably bendable to distort light as it is reflected. Means are also included to variably bend the plate to control the light reflecting direction as well as the degree of distortion. The device is adapted for mounting on a fence post or the like in a position elevated sufficiently from the ground to be struck by such oncoming headlights.

3,813,144

METHOD AND DEVICE FOR COLOR MODULATION

Akio Kumada, Kodaire; Sakichi Ashida, Fuchu; Keiichiro Aizu, Tokyo, and Masaaki Koga, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 810,162, March 25, 1969, abandoned. This application Apr. 4, 1972, Ser. No. 241,073
Claims priority, application Japan, Mar. 30, 1968, 43-20814; Sept. 13, 1968, 43-65582; Oct. 5, 1968, 43-72476
Int. Cl. G02b 22/28; G02f 1/26
U.S. Cl. 350—150 31 Claims



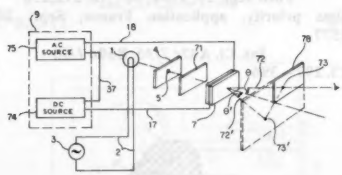
A method and a device for color modulation in which an irregular ferroelectric material is used as a color modulator, on which an electric field higher than the threshold field of the monocrystal of said material is imposed to cause the spontaneous polarization to be reversed, the change in the biaxial birefringence of said irregular ferroelectric material caused by the polarization reversal being utilized to vary the retardation of one of the two refracted rays from the other in the course of transmission through said color modulator and thereby to vary the interference color.

3,813,145

VOLTAGE-CONTROLLED LIQUID CRYSTAL X-Y DISPLAY DEVICE

Clarence L. Hedman, Jr., Campbell, and Perry H. Vartanian, Jr., Woodside, both of Calif., assignors to SCM Corporation, New York, N.Y.

Division of Ser. No. 242,709, April 10, 1972, Pat. No. 3,758,195. This application Aug. 22, 1973, Ser. No. 390,459
Int. Cl. G02s 3/16
U.S. Cl. 350—160 LC 5 Claims



Light produced by using as a "diffraction grating" a cell containing a liquid crystal material is used in a two-dimensional (X-Y) beam deflector. Independently variable AC and DC fields simultaneously applied across the cell present the beam at selectable positions of a viewing station.

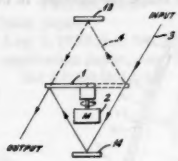
3,813,146

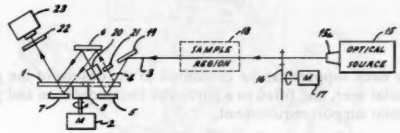
LIGHT BEAM ALTERNATOR HAVING A SINGLE ROTATING MIRROR

Darrell E. Burch, Orange City; Francis J. Gates, Costa Mesa; David A. Gryvnak, Orange City, and John D. Pembrook, Costa Mesa, all of Calif., assignors to Philco-Ford Corporation, Blue Bell, Pa.

Filed May 4, 1973, Ser. No. 357,217
Int. Cl. G02f 1/34
U.S. Cl. 350—285 9 Claims

A single rotating mirror is combined with a plurality of fixed mirrors to provide an alternating optical path. The entrance and exit beams can be made quite narrow and are not varied as the device switches between two alternate equal-length in-





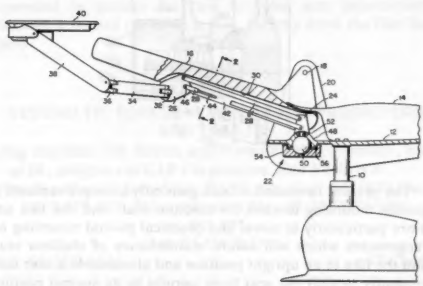
ternal paths. Such an alternator has application in optical measurement systems where it may be desired alternately to illuminate a pair of reference light absorption cells.

3,813,147

DENTAL APPARATUS

Michael Edward Rick, Rochester, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed Oct. 10, 1972, Ser. No. 296,094
Int. Cl. A47c 1/04, 7/62
U.S. Cl. 297—191 8 Claims



Disclosed is a dental apparatus comprising a chair-instrument tray combination, wherein the instrument tray is attached to the articulating backrest of the dental chair so that the tray follows the movement of the backrest. The support of the tray includes a parallelogram linkage which maintains the tray horizontally oriented as the backrest is moved between an upright and a reclined position. The tray support also includes a leveling mechanism for initially leveling the tray and adjusting it parallel to the true horizontal independent of the chair itself. This is to compensate for situations where the floor on which the chair rests is not level.

3,813,148

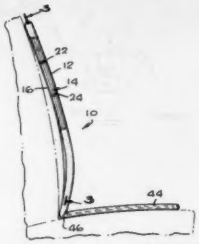
ADJUSTABLE BACK SUPPORT

Henry Kraus, 15984 Tobin Way, Sherman Oaks, Calif. 91403

Filed Apr. 17, 1972, Ser. No. 244,703
Int. Cl. A47c 7/46
U.S. Cl. 297—231 4 Claims

Adjustable back support having a resilient cushion with metal stiffener bars therein, the metal stiffener bars are

resilient when bent below the elastic limit, and malleable when bent thereabove so that the metal stiffener bars can be bent to a desired shape to shape the cushion. In this way the adjustable back support can be contoured to the desires of the particular user, and fitted to a particular back condition and particular support requirement.

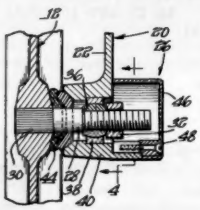


3,813,149

PIVOTAL MOUNTING DEVICE FOR STADIUM SEATS AND THE LIKE

Edwin F. Lawrence, III, Sterling, and Delmar D. McNinch, Rock Falls, both of Ill., assignors to Lawrence Brothers, Inc., Sterling, Ill.

Filed Dec. 23, 1971, Ser. No. 211,587
Int. Cl. A47c *1/02, 1/06, 1/12*
U.S. Cl. 297—335 **5 Claims**



The present invention relates generally to improvements in pivotal mounting devices for stadium seats and the like and more particularly to novel and practical pivotal mounting arrangements which will assure maintenance of stadium seats and the like in an upright position and also enable a user conveniently to shift the seat from upright to its normal position for occupancy. The mounting device disclosed herein comprises a stub shaft, one extremity of which is peripherally splined for attachment to a fixed frame member, the opposite extremity being threaded to accommodate a clamping nut member. Interposed between the splined extremity and the clamping nut is a spherical bearing arrangement to compensate for variations in seat installations. Friction means encircling the stub shaft seals the mounting from moisture and assures maintenance of a seat member in upright position when not in use.

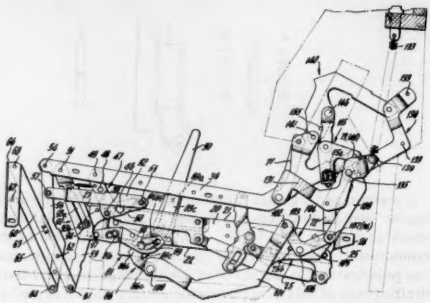
3,813,150

CHAIR WITH BACKREST MOVABLE UP AND DOWN AND HARDWARE THEREFOR

Alex J. Katz, West Orange, and Robert J. Caldwell, Bayoone, both of N.J., assignors to Moharcs Industries, Inc., Amsterdam, N.Y.

Filed Aug. 22, 1972, Ser. No. 282,847
Int. Cl. A47c *1/02, 3/02*; A61g *15/00*
U.S. Cl. 297—353 **27 Claims**

This chair has a backrest which can be moved up and down between raised and lowered positions; and can be reclined to T.V. and fully reclined positions. A retractable footrest is also provided to be projected to T.V. position, and moved to fully reclined position. The raising and lowering of the backrest can only take place when the seat is in upright position under control of a handle operated by the person sitting in the chair, who must lean forward to get at the handle and thus move away from the backrest before the backrest is moved up or down. The backrest is locked down in the upright position, with the footrest retracted. Means is provided to lock the backrest in its up position. Also means is provided to lock the



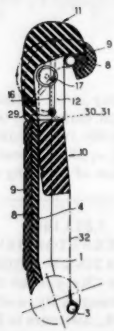
footrest mechanism in retracted position. Spring means is provided to assist in lifting the backrest. Means is provided to releasably lock the backrest in "up" position throughout the recline cycle. Means is provided to keep the handle from being operated to lower the backrest, when the backrest is in T.V. or fully reclined positions. The backrest and footrest are supported by mechanism disposed on both sides of the chair, such mechanism being controlled by handle controlled means on one side only of the chair.

3,813,151

SEATS HAVING HEAD-RESTS

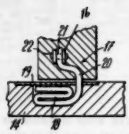
Jean G. Cadiou, Paris, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France

Filed Sept. 25, 1972, Ser. No. 292,250
Claims priority, application France, Sept. 28, 1971, 71.35577
Int. Cl. A47c *7/36*; B60n *1/06*
U.S. Cl. 297—396 **7 Claims**



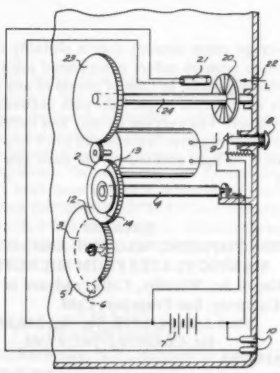
The back part of a vehicle seat includes a retractable head rest located in an opening in the upper portion of the back part. When the head rest is in its raised position, an auxiliary cushion covers the opening.

3,813,152
EYEGLASS FRAME
Gerald Hampel, Aussichtsweg 9, A Vienna 19, Austria
Filed Jan. 22, 1973, Ser. No. 326,659
Claims priority, application Austria, Jan. 21, 1972, 960/72
Int. Cl. G02c 5/22, 5/16; E05d 1/00
U.S. Cl. 351—153 8 Claims



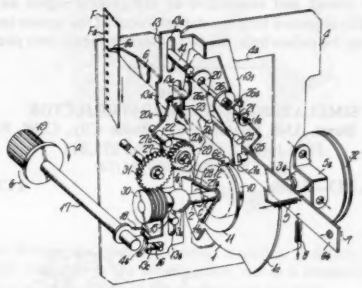
A main frame portion for the lenses has spaced first end sections, and a pair of earpieces each have a second end section. A pair of hinges each connect one of the earpieces to the main frame portion so that the earpiece can be displaced between a folded and an open position. Each of the hinges includes a first hinge component of piano wire having one end embedded in one of the end sections of the main frame portion and another end extending outwardly beyond the latter, and a second hinge component is hingedly connected with the other end and is mounted on an end section of the associated earpiece. The hinges connect the earpieces with the main frame portion in such a manner that the end sections of the earpieces do not contact the main frame portion when the earpieces are in open position except if the earpieces are displaced past the open position, in which case contact can occur only after the outwardly extending end portion of the first hinge component has undergone elastic deformation.

3,813,153
MOTION-PICTURE APPARATUS CAPABLE OF GENERATING AN ELECTRICAL SYNCHRONIZING SIGNAL FOR THE SYNCHRONIZATION OF A SOUND TRACK
Johann Roth, Schwabhausen, Germany, assignor to Braun Aktiengesellschaft, Frankfurt Main, Germany
Filed Oct. 13, 1972, Ser. No. 297,375
Int. Cl. G03b 31/04
U.S. Cl. 352—12 4 Claims



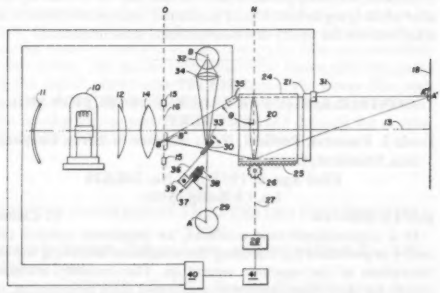
A motion-picture apparatus includes a film transport arrangement, a first unit for generating a first periodic signal in response to operation of the film transport arrangement, and a second unit including a semiconductor element responsive to the first signal and operative for generating an at least approximately sinusoidal second signal whose frequency is directly proportional to the speed of film transport.

3,813,154
STILL AND SLOW MOTION CONTROL UNIT FOR A PROJECTOR
Sadao Fujishige, Chino, Japan
Filed Aug. 6, 1973, Ser. No. 386,161
Claims priority, application Japan, Aug. 7, 1972, 47-92732
Int. Cl. G03b 21/38
U.S. Cl. 352—169 6 Claims



A control unit for a projector is provided which permits a single control member to be moved to each of normal projection position, still projection position and slow motion projection position by a manual operation which takes place externally of the projector. When the control member is moved to a still projection position, a first rockable arm is actuated to retract a film feed pawl to disable film transport. When the control member is moved to the slow motion projection position, the first rockable arm is held in its operative position while a slow motion cam interlocked with the shutter shaft is operated to actuate the first rockable arm intermittently through a second rockable arm to thereby drive the film feed pawl.

3,813,155
AUTOMATIC FOCUSING SYSTEM FOR PROJECTORS AND THE LIKE
Oleg Szymber, Elk Grove, and Norman Shim, Glenview, both of Ill., assignors to GAF Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 72,076, Sept. 14, 1970, Pat. No. 3,672,757. This application May 15, 1972, Ser. No. 253,497
Int. Cl. G03b 3/10
U.S. Cl. 353—101 17 Claims



In a first appraisal subsystem wave energy from a first source is directed to a first detection means along paths which include the wave energy being reflected by a remote screen to sense variations in the distance between the projector objec-

tive lens and the screen. In a second appraisal subsystem wave energy from a second source is directed to a second detection means by reflecting the same from a transparency to sense buckling of the transparency. Displacement of the screen, objective lens or the transparency causes the first and second detection means to generate electrical pulses which are out of time phase with respect to each other. A control circuit receives the electrical pulses from the first and second detection means and produces a control signal representing the time differential therebetween. Motive means operated by the control circuit and responsive to the control signal axially moves the objective lens to establish focus of the screen image and bring the pulses from the two detection means into phase.

3,813,156

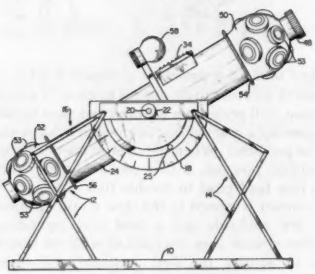
SIMULATED PLANETARIUM PROJECTOR

Arthur Davis, 3348 Canton Way, Studio City, Calif. 91604

Filed July 27, 1972, Ser. No. 275,811

Int. Cl. G03b *29/00, 21/14*

U.S. Cl. 353—119 **1 Claim**



Miniature projector which simulates the appearance of an actual planetarium projector which, when not in use, provides an object of visual interest. It incorporates a projector, having a conventional optical system, which, when in use, projects the subject matter contained on a conventional film strip, onto a screen or wall, as distinguished from an actual planetarium projector which projects spots of light onto a hemispherical screen which produces an artificial sky containing the various stars, planets, satellites, etc. It thus combines the visual interest of an actual planetarium projector and the utility of a conventional slide projector. It differs from the latter, however, in that its range of angular adjustment is considerably more, permitting the slide to be projected, not only onto a conventional vertical screen or wall, but also onto the ceiling of a room, whereby pictures and the like may be viewed by the user while lying in bed. It is of particular interest to children as a toy but has the utility of a conventional slide projector.

3,813,157

CONTROL LOGIC FOR TROUBLE DETECTION AND RECOVERY

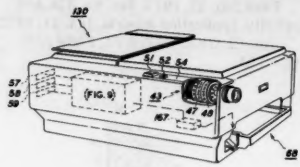
Louis J. Fantozzi, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 6, 1973, Ser. No. 348,828

Int. Cl. G03g *15/00*

U.S. Cl. 355—14 **11 Claims**

In a copier/duplicator machine, an improved control circuitry is provided for handling the situations involving the interruption of the machine operation. The circuitry includes means for detecting abnormal conditions such as jamming, or paper supply run out conditions during a copy run for a predetermined number of copies and means for maintaining the integrity of the counts of the copies being made according to a differentiated billing schedule notwithstanding the interruptions of the machine operation during the copy run. In addition, the circuitry includes means for detecting paper run out conditions artificially induced to tamper with the differential billing meters and means to stop the machine and condition the billing meters so that they are returned to higher billing mode.



3,813,158

COLOR PRINTER USING LIGHT FLASH TUBES

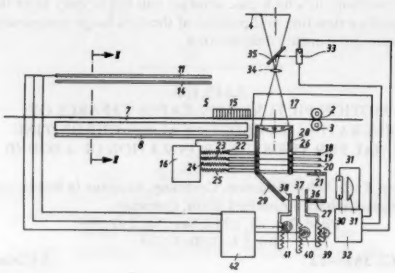
Wolfgang Zahn; Berthold Fergg, and Walter Knapp, all of Muenchen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 29, 1971, Ser. No. 184,796

Claims priority, application Germany, Oct. 2, 1970, 2048606

Int. Cl. G03b *27/76*

U.S. Cl. 355—38 **20 Claims**



The average color content over a plurality of negatives in each of three primary colors is measured prior to printing of any of these negatives. In case of excess of any color, subtractive filters are inserted in the light path between the flash gun and the original. The average density and density distribution of an individual negative is measured prior to printing and the total amount of light emitted by the flash gun controlled accordingly.

3,813,159

PHOTO COMPOSING MACHINE AND METHOD FOR MAKING PLATES FROM MICROFILM

P. L. Schlegel, Jr., Whittier, Calif., assignor to George Lithograph Company, San Francisco, Calif.

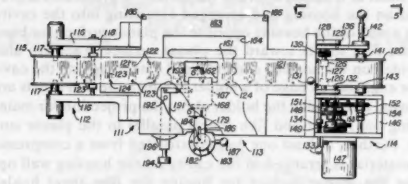
Filed Apr. 24, 1972, Ser. No. 246,805

Int. Cl. G03b *27/42, 27/46*

U.S. Cl. 355—53 **4 Claims**

A commercially available machine for making offset printing plates is controlled by digital data read from punched tape (or other medium) to move a vacuum board which holds the unexposed plate longitudinally and to move a chase transversely in steps. According to the present invention, the film holder conventionally used for platemaker use, located on the chase, is replaced by a photographic enlarger having a microfilm feeder preferably controlled to expose only certain

frames. The feeder accurately centers selected frames relative to the axis of the lens of the enlarger, preferably using marks



adjacent an edge of the film and one or more photocells which control the driving motor of the feeder. Several channels of marks may be used.

3,813,160

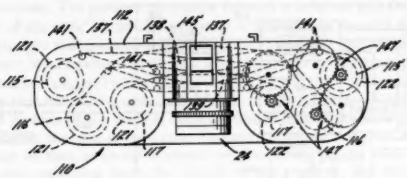
PHOTOGRAPHIC PROJECTION DEVICE

George R. Nowak, 423 Engle Blvd., Park Ridge, Ill. 60068

Continuation-in-part of Ser. No. 819,499, April 25, 1969, abandoned. This application Sept. 5, 1972, Ser. No. 286,227

Int. Cl. G03b 27/76

U.S. Cl. 355—71 14 Claims



A photographic projection device suitable for providing custom illumination in the printing of uneven negatives. The projection device includes a flexible reflector operatively mounted and aligned within a lamphouse for reflecting light from a variable intensity source through the projection opening of the lamphouse. In addition, the projection device further includes both base mounted adjustment controls for selectively varying the lamphouse height and the lens focus, and a spool mounted filter assembly for selectively super-imposing correction filters over the lamphouse projection opening.

3,813,161

PLATEN COVER

David M. Curtis, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

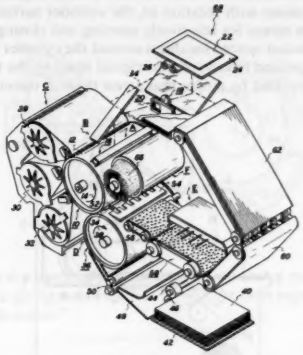
Filed Mar. 12, 1973, Ser. No. 340,156

Int. Cl. G03b 27/62

U.S. Cl. 355—75 11 Claims

A closure device which is mounted movably on a support member for substantially covering an article disposed thereon.

The closure device includes a resilient pad and a sheet member coterminous therewith throughout the contact area therebetween. In the contact area, the sheet member substantially fills the interstices of the resilient pad.



The foregoing abstract is neither intended to define the invention disclosed in the specification, nor is it intended to be limiting as to the scope of the invention in any way.

3,813,162

APPARATUS FOR FORMING RELIEF PRINTING PLATE FROM LIQUID PHOTO-SENSITIVE RESIN

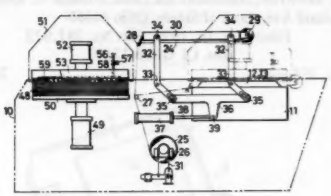
Kaname Watabe, Osaka; Kosuke Arai, Tokyo; Yasuo Taneda, Tokyo, and Kiyomi Naka, Tokyo, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Apr. 27, 1973, Ser. No. 355,282

Claims priority, application Japan, May 11, 1972, 47-45932

Int. Cl. G03b 27/04

U.S. Cl. 355—85 6 Claims



Apparatus for forming a relief printing plate has a spacer frame removably and closely fitted on a hollow structure to hold a transparent cover film therebetween. The hollow structure has a source of ultraviolet rays therein and is closed at its upper portion with a transparent glass plate on which an image bearing negative and the transparent cover film are laminated in that order. The spacer frame has three frame sides for guiding the liquid photo-sensitive resin upon the cover film and one remaining frame side for discharging superfluous resin. The liquid photo-sensitive resin is supplied through the middle side frame of the three frame sides.

3,813,163

COPYING MACHINE OF THE PENETRATION PRINTING TYPE

Yugoro Kobayashi, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Nov. 6, 1972, Ser. No. 303,864

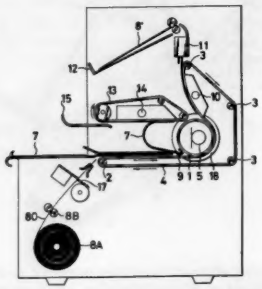
Claims priority, application Japan, Nov. 17, 1971, 46-91456

Int. Cl. G03b 27/12

U.S. Cl. 355—109 7 Claims

In a copying machine wherein an original sheet to be copied and a photosensitive copy sheet are carried in superposed

relation on the surface of a transparent rotating cylinder, teeth for gripping the leading edge of the original sheet to prevent dislocation thereof are mounted for rotation adjacent to, and in synchronism with rotation of, the cylinder surface. Signal-responsive means for selectively opening and closing the teeth are disposed at spaced localities around the cylinder to control engagement and release of the original sheet by the teeth. The teeth are rotated by means that arrest them at the end of each



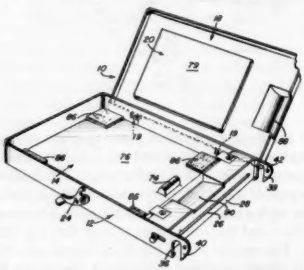
complete revolution until a sensor detects passage of the trailing end of the original in the path of sheet advance. The machine is operable to conduct an original through a predetermined number of successive revolutions before releasing it, for production of a corresponding number of copies; initiation of each successive revolution of the original begins only when the trailing edge of the original has passed a point at which the original has been fully copied.

3,813,164

FILM HOLDER FOR MAKING PRINTS

Carl S. Skowron, Damascus Rd., and William A. Kolozsi, 832 Highland Ave., both of Salem, Ohio 44460

Filed Aug. 16, 1972, Ser. No. 281,022
Int. Cl. G03b *17/50*
U.S. Cl. 355—44 **28 Claims**



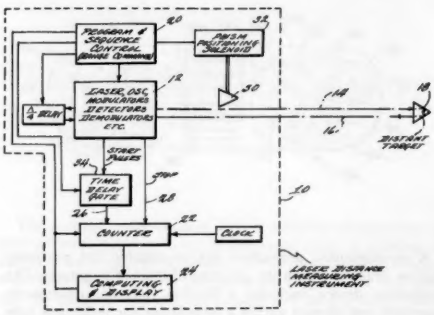
A device especially for making prints from transparencies has a housing provided with a cavity forming a receptacle for selectively receiving a packet of stacked, interconnected sheets of photosensitive film, and a planar surface provided in a cover portion of the housing and arrangeable substantially parallel and adjacent the film sheets for forming a screen for focusing a projected image thereon. A pair of rollers are resiliently mounted on the housing for resilient movement of their peripheral surfaces toward one another, and are arranged parallel and adjacent to one another and to a slot provided in the housing such that a plane passing between the rollers passes through the slot. These rollers are arranged for breaking a developing chemical packet associated with a film sheet as the sheet is passed through the slot and between the rollers, and for spreading the chemical about the sheet for developing same. A crossed elastic band may be adjustably arranged about adjacent end portions of the rollers to provide their resilient mounting, and also rotate one roller in a direction opposite the rotation of the other for advancing the film sheet as it passes between the rollers. A projection is provided on the housing and arranged extending into the cavity from a wall of the housing opposite the planar surface for biasing the film sheets toward the planar surface. Tabs are also provided on the housing and arranged extending into the cavity for engaging an edge of a holder in which the film sheets are arranged and biasing the holder about the projection for maintaining the holder and film sheets parallel to the planar surface. Further, at least one pad constructed from a compressible material is arranged in the cavity on the housing wall opposite the planar surface for biasing the film sheet holder toward the planar surface and positioning the film sheet adjacent the planar surface in the plane of the planar surface when the cover portion is in a position permitting access to the cavity.

3,813,165

DIGITAL DISTANCE MEASURING APPARATUS EMPLOYING MODULATED LIGHT BEAM

Robin H. Hines; William L. Hollinshead, both of Tullahoma, and John K. Forester, Manchester, all of Tenn., assignors to Laser Systems & Electronics Inc., Tullahoma, Tenn.

Filed Sept. 20, 1971, Ser. No. 181,759
Int. Cl. G01c *3/08*
U.S. Cl. 356—5 **11 Claims**

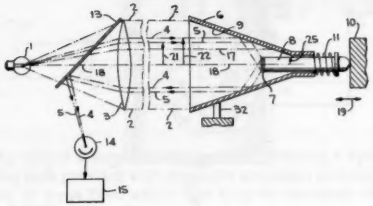


An improved distance measuring apparatus of the type that automatically calculates distance to a remote reflection target based upon a measured phase difference between a modulated transmitted light beam and a reflected return beam from the remote target incorporates means for ensuring that phase difference measurements are made only when the amplitude of the demodulated return signal is within predetermined limits and therefore that the desired degree of accuracy for the resulting distance calculation is obtained. Additionallly, means are included for ensuring that successive phase different measurements are taken from time-spaced return signals in order that an average of several measurements are obtained from spaced packets or bunches of reflections ordinarily resulting from scintillations due to changing atmospheric conditions over the beam path length, and that the resultant average measurement more accurately represents the true distance to the remote target site.

3,813,166
OPTICAL DISPLACEMENT INDICATOR

Donald J. Mary, New Carrolton, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 7, 1973, Ser. No. 338,795
Int. Cl. G01p 3/36
U.S. Cl. 356—28 9 Claims



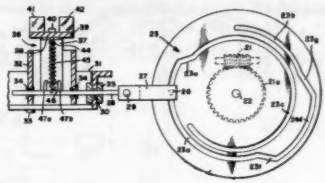
An optical device for measuring the displacement of a remote object. In a preferred embodiment, the device consists of two major subassemblies. One assembly consists of a light source which projects a collimated light beam towards the object whose displacement is to be measured. Associated with the light source is a beamsplitter which diverts any light reflected back from the direction of the object onto a photoelectric cell. The other assembly is located near the object and in the path of the collimated light beam. This assembly consists of a hollow cone whose inside surface is specularly reflective. A plunger is fixed to slide along the axis of the cone. The plunger protrudes through a hole cut into the apex of the cone. A small flat mirror is fastened to the end of the plunger that projects inside the cone. The other end of the plunger rests against the object. The plunger is spring loaded to maintain contact with the object. The light in the collimated beam that enters the open end of the cone is reflected by the inner surface of the cone in such a manner that all the rays of light cross the axis of the cone. The apex angle of the cone is chosen so that, even by multiple reflections within the cone, any rays emerging from the mouth of the cone do not find their way back to the photocell; that is, the cone alone is not a retroreflector. The small mirror on the end of the plunger, however, intercepts a portion of the light rays as they cross the cone axis and redirects them so that, upon reflection from the opposite wall of the cone, the light rays emerge travelling in the direction of the photocell. As the object moves, the plunger slides along the axis of the cone (the cone being stationary) and the amount of light reflected back to the photocell changes. Furthermore, the amount of light reflected back to the photocell is a linear function of the position of the plunger and, hence, of the position of the object. The photocell current is measured by a meter whose scale is calibrated in units of length.

3,813,167
LIGHT FILTER UNIT HAVING SNAP-ACTION DEVICE FOR SHIFTING FILTER MEANS INTO AND OUT OF OPERATIVE POSITION

Edgar G. Johnson, Jr., 7724 Mallard Rd., Huntsville 35802; and James J. Cornelison, Rt. 1 Box 118, Gurley 35748; both of Ala.

Filed Feb. 26, 1973, Ser. No. 335,603
Int. Cl. G01j 3/00, 3/12
U.S. Cl. 356—74 9 Claims

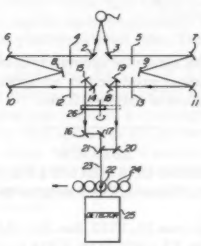
The invention described herein concerns a system for alternately shifting one or more filters into and out of the path of a light beam in an optical instrument using a light beam, such as a spectrophotometer in correlation with the wave length of the light in the beam. It also concerns a mounting means that comprises a spring under tension to shift the filter support with rapid "snap-action".



3,813,168
TWO-WAVELENGTH SPECTROPHOTOMETER

Tadashi Honkawa, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 14, 1972, Ser. No. 234,584
Claims priority, application Japan, Mar. 19, 1971, 46-15112
Int. Cl. G01j 3/42
U.S. Cl. 356—97 10 Claims



A plurality of test tubes containing specimens are passed successively through a predetermined position. Two monochromatic beams are transmitted alternately along a single path through said predetermined position and through each of the test tubes passing through said predetermined position. The characteristics of the two beams are such that one of them is capable of being absorbed by the specimen and the other substantially incapable of being absorbed. Thus it is possible to obtain an electric signal representing the ratio or difference between electric signals corresponding to said two monochromatic beams.

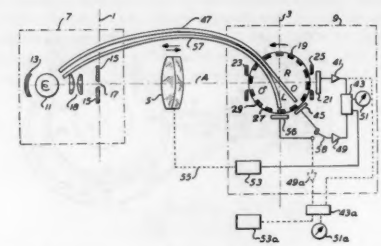
3,813,169
DEVICE FOR DETERMINING POSITION AND FOCUS OF AN OPTICAL MEMBER

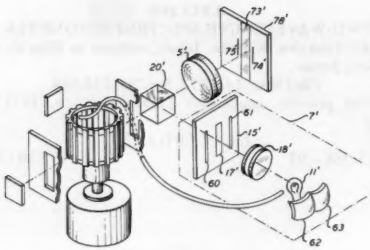
Paul T. Kaestner, 246 Bay Ave., Huntington, N.Y.

Filed Jan. 2, 1973, Ser. No. 320,315
Int. Cl. G01b 9/00
U.S. Cl. 356—127 19 Claims

Apparatus for determining the alignment in the direction transverse of the optical axis of a lens and/or its focus. The apparatus includes a light beam generating means and means for providing output signals which indicate lateral or angular displacement of the optical axis of the lens with respect to the op-

timum axis or the axis of the apparatus and the focus or relation to the position of optimum focus of the lens. Another configuration provides means for accurately determining the magnification of an image produced by an optical system in addition to determination of optimum focus.





3,813,170

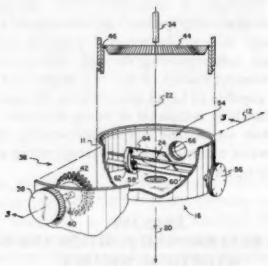
ALIGNMENT OF A DATUM LINE SOURCE

Edward G. Sears, Houston, Tex., assignor to Paul J. Charrin, Houston, Tex.

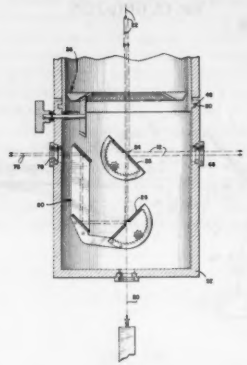
Filed June 28, 1972, Ser. No. 266,972

Int. Cl. G02b 7/14; G01b 11/26

U.S. Cl. 356—138 **8 Claims**



A method and means are provided for aligning a datum line source useful in performing precise surveying or construction operations relative to a predetermined reference point. The datum line source utilizes a laser beam generator and may be precisely aligned with a predetermined reference point without the aid of a plummet. A portion of a downwardly directed laser beam passes though an aperture in a reflecting surface disposed in the path of the laser beam to enable precise alignment with a predetermined reference point. The other portion of the laser beam is directed by the reflecting surface for use as a datum line.



3,813,171

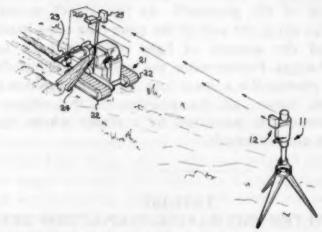
LASER BEAM SURVEY METHOD AND APPARATUS

Ted L. Teach, Springfield, Ohio, and James D. Ramsay, Los Altos, Calif., assignors to Laserplane Corporation, Dayton, Ohio

Filed Jan. 11, 1973, Ser. No. 322,864

Int. Cl. G01b 11/26

U.S. Cl. 356—152 **8 Claims**

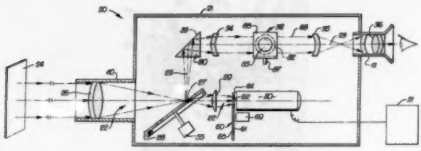


Laser beam survey method and apparatus utilizing a single laser beam source to establish both horizontal and vertical surveying reference planes. Such method and apparatus can be utilized, for example, to simultaneously automatically control tool height adjustment and steering adjustment mechanisms in a mobile ditch or trench digging machine.

3,813,172
PHOTOMETRIC DEVICE WITH A PLURALITY OF MEASURING FIELDS

Richard A. Walker, Woodland Hills, and Ralph M. Weisner, Canoga Park, both of Calif., assignors to Kollmorgen Corporation, Holyoke, Mass.

Filed Jan. 3, 1972, Ser. No. 214,588
Int. Cl. G01j 1/42
U.S. Cl. 356—225 10 Claims

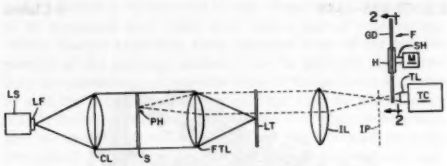


An optical system for a photometer including a light-measuring path provided with means for accurately defining a plurality of areas from which light is to be measured within a larger field of view.

3,813,173
DEFECT SENSING APPARATUS AND METHOD

Michael P. Teter, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Feb. 22, 1972, Ser. No. 228,170
Int. Cl. G01c 1/06
U.S. Cl. 356—239 15 Claims

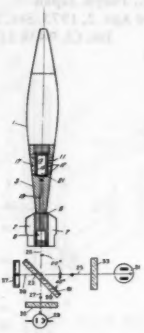


Apparatus for and method of sensing or detecting defects such as so-called pin holes in transparent thin films which are deposited on a surface of a transparent substrate either originally in the form of a thin film microcircuit pattern or for the subsequent purpose of making a microcircuit pattern out of a deposited film covering the entire surface of the substrate. The substrate and its film are illuminated by a collimated source of white or suitably filtered light and are imaged or focused through a first lens system or Fourier transform lens at a point on one side of a light trap or dark field stop. When the thin film is in the form of a microcircuit pattern, a negative of a Fourier transform of a defect-free microcircuit identical in pattern to the pattern imaged through the transform lens is required to be used as the light trap or dark field stop. However, when the thin film covers the entire surface of the substrate a conventional or basic form of light trap may be used. A defect such as a pin hole in the illuminated film diffracts the light rays passing through the pin hole and these rays are imaged or focused through a second lens system at a point in an image plane in advance of the lens of a vidicon tube or television camera. A rotating filter preferably comprising a transparent disk having on selected alternate segments of one face thereof a thin film of the same material as the film on the substrate, or a film of similar light absorbing characteristics, is disposed between the image plane and the camera lens. The arrangement causes flashing on and off of the images of pin holes in the thin film on the substrate while images of other defects such as dust or finger prints on the substrate remain steadily on. Various modifications of the rotating filter are possible or practicable.

3,813,174
OPTICAL AMMUNITION INSPECTION SYSTEM AND METHOD

Matthew Nowak, Passic, and Gus George Tirellis, Scranton, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 30, 1973, Ser. No. 346,506
Int. Cl. G01n 21/16, 21/32
U.S. Cl. 356—241 11 Claims

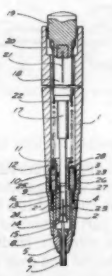


A mortar projectile, having a long narrow flash passage leading to an ignition cartridge, is inspected for obstructions at the junction between the cartridge and the passage by reflecting an ultraviolet beam, by means of a dichroic beamslitter, through the flash passage to a photo-luminescent coating on the adjacent end of the cartridge. The ultraviolet beam excites the coating to produce visible light which passes back through the flash passage and the same beamsplitter to a detector, such as a photocell or photomultiplier tube. The ultraviolet radiation source includes a broad-band glow lamp or xenon flash tube and an ultraviolet filter and a second dichroic beamsplitter for filtering out most of the visible light. The inspection apparatus also includes a converging quartz lens and a plurality of lens stop apertures for focusing and collimating the ultraviolet beam to a small diameter at the photo-luminescent coating, a green light filter in front of the photomultiplier, and an automatic shutter for shielding the photomultiplier when not in use.

3,813,175
MECHANICAL PENCIL

Otto Katz, Schwbach, Germany, assignor to A. W. Faber-Castell, Nuernberg, Germany

Filed Dec. 4, 1972, Ser. No. 312,117
Claims priority, application Germany, Dec. 4, 1971, 2160306
Int. Cl. B43k 21/16, 21/22
U.S. Cl. 401—65 8 Claims



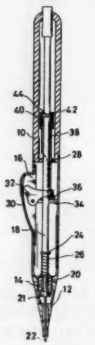
A mechanical pencil, especially for thin leads, wherein a lead supported in a small diameter lead support tube carried

by a slide member axially movable in a front part of a tubular housing may be advanced by axial pressure on an actuating member projecting from the rear end of the housing and actuating a collet engaging a rear portion of the lead.

3,813,176
EVER-SHARP PENCIL

Mitsunori Kamo, Hiroshima, Japan, assignor to Mitsubishi Pencil Co., Ltd., Tokyo, Japan

Filed Apr. 2, 1973, Ser. No. 346,925
Int. Cl. B43k 21/22
U.S. Cl. 401—94 **3 Claims**

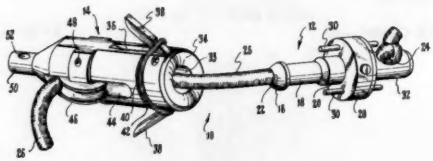


In an automatic lead storage pencil lead is extensible by means of a force translating means operatively arranged in a side portion of a body casing. The force translating means comprises an actuator means operated by radially directed forces and a camming means which translates the radially directed forces into axially directed forces thereby to urge a lead tube of the pencil downwardly extend and thus lead is extended beyond a cap nozzle of the pencil.

3,813,177
RECOVERY CABLE CONNECTOR FOR DIVER-SWIMMER

Howard Cartwright, Quarters A, Naveodfac, Indian Head, Md. 20649

Filed Dec. 30, 1971, Ser. No. 213,900
Int. Cl. F16b 21/07
U.S. Cl. 403—27 **3 Claims**

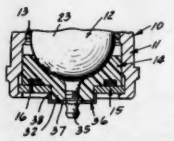


A cable connector suited for underwater salvage operations by diver-swimmers having an engagable male and a female part. The male member is attached to a hoisting line and flotation gear and the female part is attached to the load. A hauling line attached to the male member, leads away from the head, threads into the central barrel and over a sheave in the female part. Pulling on the hauling line brings the two parts into locking engagement. Spring-loaded cammable latches on the female part engage the head of the male member for a swivel connection.

3,813,178
WEAR INDICATING JOINT

Edward J. Herbenar, Detroit, and Kenneth R. Pozolo, Roseville, both of Mich., assignors to TRW, Inc., Cleveland, Ohio

Filed Aug. 10, 1972, Ser. No. 279,481
Int. Cl. F16c 11/06
U.S. Cl. 403—27 **4 Claims**

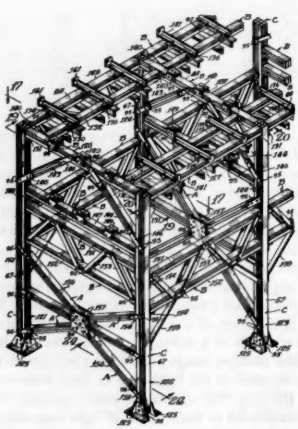


A ball and socket joint for automotive wheel suspensions and steering linkages having an externally visible indicator showing wear of the joint components to facilitate inspection for determining when the joint should be replaced.

3,813,179
STRUCTURES FORMED FROM STRUCTURAL MEMBERS

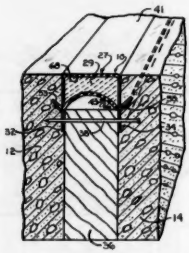
Charles E. Priest, Angola, Ind., assignor to Alum-Elec Structures, Inc., Angola, Ind.

Continuation of Ser. No. 42,436, June 1, 1970, abandoned, which is a continuation of Ser. No. 751,254, Aug. 8, 1968, abandoned. This application Apr. 20, 1972, Ser. No. 246,066
Int. Cl. F16b 39/00
U.S. Cl. 403—348 **4 Claims**



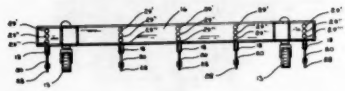
An extruded structural member having co-planar flanges with the distal edges of said flanges being in spaced relation and each such edge having an integral re-entrant flange, the re-entrant flanges being in spaced confronting parallel relation and defining therebetween a longitudinally extending slot. A T-bolt has a head having a groove V-shaped in transverse cross-section and double V-shaped in plan. The head is adapted to pass inwardly through the slot and to be rotated to engage the groove with the edges of the re-entrant flanges, the flanges being deformed by said groove when the T-bolt is tightened.

3,813,180
FRANGIBLE CONCRETE-JOINT SEALANT PACKAGE
Robert O'Brill, 5315 W. Madison, Skokie, Ill. 60076
Filed Nov. 16, 1972, Ser. No. 307,037
Int. Cl. B65d *83/00*
U.S. Cl. 404—48 9 Claims



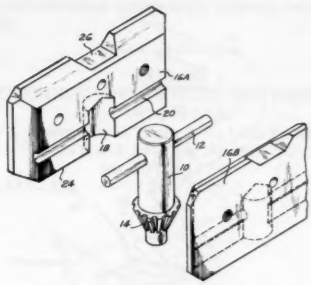
A frangible package containing sealant for sealing joints between adjacent construction panels or slabs composed of such materials as concrete, masonry units and curtain wall, includes an elongated tube-like bar having a pair of continuous lines of weakness extending longitudinally along its entire length on opposite sides thereof to enable the bar to be broken apart longitudinally along the lines and thus to release the joint sealant disposed within the hollow interior of the bar, and a pair of end walls for sealing the sealant within the bar. The bar is adapted to be fastened to and extend along the top edge of an expansion joint filler strip, and a pair of external upturned flanges extending from opposite sides of the bottom portion of the package anchor it to the adjacent slabs after they are positioned on opposite sides of the package and strip so that the top portion of the package may be pulled away readily from its bottom portion leaving it in place to help support the sealant. A bottom wall of the bar is bowed inwardly throughout its length to cause the sealant to assume a complementary shape so that its advantageous shape facilitates its expansion and contraction. When the top portion of the package is separated from its bottom portion, the sealant flows into sealing engagement with the adjacent side edges of the slabs to seal the joint therebetween. When used to seal concrete joints, the top wall of the bar has an external flat surface to serve as a screed when finishing the adjacent concrete surfaces.

3,813,181
FINE GRADE INDICATING SYSTEM
John I. Barnes, III, 621 N. Main St., Louisburg, N.C. 27549
Filed Apr. 21, 1972, Ser. No. 246,370
Int. Cl. E01c *23/00*
U.S. Cl. 404—84 6 Claims



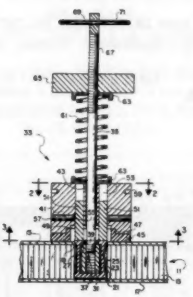
In abstract, a preferred embodiment of this invention is a fine grade indicating device for attachment to highway fine grading machines so that either the operator of the machine or the highway inspector can determine at a glance the accuracy of the grade being prepared.

3,813,182
DEVICE FOR HOLDING CHUCK KEY AND FOR DRILLING STRAIGHT AND PERPENDICULAR HOLES
Walter H. Brach, Somerville, N.J., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Aug. 18, 1972, Ser. No. 281,829
Int. Cl. B23b *49/00*
U.S. Cl. 408—72 1 Claim



A device for supporting a drill chuck key and for use in enabling straight and perpendicular holes to be drilled with a portable electric drill powered bit comprising a rectangular flat member provided with a socket for supporting the key, the member having one flat edge and three other edges which are either perpendicular or parallel to the flat edge, each other edge having a longitudinal groove in cross section defining a V.

3,813,183
INSERT FACING TOOL
William J. Abernathy, and Lowell G. Snoddy, both of Huntsville, Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Aug. 2, 1972, Ser. No. 277,436
Int. Cl. B23b *41/00*, *1/20*
U.S. Cl. 408—80 6 Claims

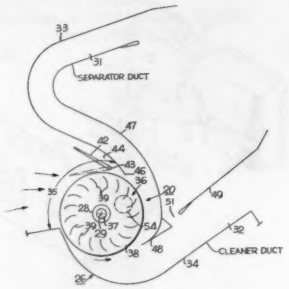


A manually actuated tool for facing the exposed end of an insert installed in a honeycomb panel so that the open end of the insert will be flush with or slightly undercut from the outer surface of the panel comprising a rotatable axial stud having a threaded end adapted to screw into an internally threaded sleeve of the insert. A plurality of cutting bits are held in a round body portion that is manually rotated around the stud so that the cutting bits continuously engage the end of the insert in a cutting action. Pressure is adjustably applied through a spring against the body portion, and thus the bits, by a pressure nut threaded on the stud.

3,813,184
INLET CHOKE VANE FOR TRANSVERSE BLOWER

William F. Temple, Independence, and David K. Johnston, Blue Springs, both of Mo., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 1, 1972, Ser. No. 311,340
Int. Cl. F04d 5/00, 27/00
U.S. Cl. 415—54 8 Claims

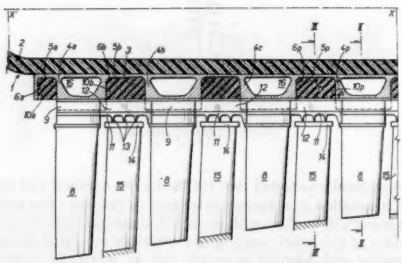


A transverse fan for use in the cleaning and separating system of a combine harvester and wherein such transverse fan is provided with a choke vane mechanism positioned in the air inlet of the aforesaid fan and with such choke vane mechanism adjustable for varying the quantity of air being supplied to a separator and the cleaner without varying the ratio of air being supplied to such separator and such cleaner.

3,813,185
SUPPORT STRUCTURE FOR ROTOR BLADES OF TURBO-MACHINES

Jean Georges Bouiller, Brunoy; Michel Roland Gobin, Dammarie-le-Lys; Armand Jean-Baptiste La Croix, Itteville, all of France; Louis Jules Bauger, deceased, late of Vanves, France (by Madeleine Henriette Aimee Bauger, administratrix), and by Jeanne Denise Olivier, administratrix, La Ferte-Bernard, France, assignors to Societe Nationale D'Etude et de Construction de Moteurs d'Aviation, Paris, France

Filed June 28, 1972, Ser. No. 267,183
Claims priority, application France, June 29, 1971, 71.23689
Int. Cl. F01d 5/32
U.S. Cl. 416—198 8 Claims

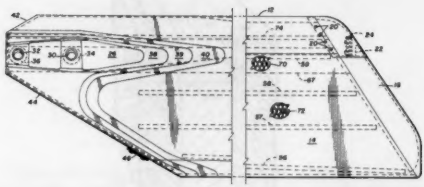


A support structure for rotor blades of a turbo-machine comprises a substantially cylindrical or conical hollow drum of fibrous material and a plurality of blade-carrier bars of metal attached side by side on the outer surface of the blades.

3,813,186
ROTOR BLADE SHEAR REINFORCEMENT

Charles V. Palachek, Smithfield, and William K. Underhill, Jr., Bedford, both of Tex., assignors to Textron Incorporated, Providence, R.I.

Filed Oct. 10, 1972, Ser. No. 295,887
Int. Cl. B64c 27/46, 27/00, 11/24
U.S. Cl. 416—226 10 Claims

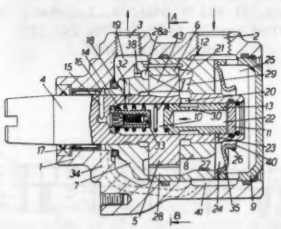


Stiffness and shear resistance necessary for a helicopter rotor blade is provided by a first honeycomb cellular structure whose cells extend across the blade thickness and which structure spans at least that portion of the blade chord which includes the longitudinal boundary between a leading edge spar and a trailing edge skin section and a second honeycomb cellular structure joined to the trailing edge of the first structure of density less than the density of the first cellular structure. The front leading edge spar is joined to an upper trailing skin and a lower trailing skin which join at a trailing edge seam. The honeycomb sections are enclosed within the leading edge spar and a tapering chamber formed by the upper and lower skins.

3,813,187
VANE-TYPE HYDRAULIC PUMP

Klaus Winter, Julius-Brecht-Str., Germany, assignor to International Telephone and Telegraph Industries, Inc., New York, N.Y.

Filed Apr. 23, 1973, Ser. No. 353,228
Claims priority, application Germany, Apr. 21, 1972, 2219587
Int. Cl. F04b 23/12, 39/00
U.S. Cl. 417—79 2 Claims



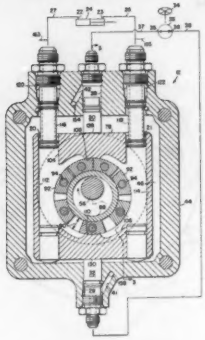
A vane-type hydraulic pump is disclosed which employs a variable working chamber. It employs a by-pass regulator formed to include a flow-control valve and a pilot pressure relief valve which are formed as part of the pump shaft, thereby providing a reduction in pump size and weight.

3,813,188

PUMP ASSEMBLY FOR POWER STEERING SYSTEM

Roger John Nelson, Cedar Falls, Iowa, assignor to Deere & Company, Moline, Ill.

Division of Ser. No. 166,202, July 26, 1971, Pat. No. 3,705,493. This application Sept. 14, 1972, Ser. No. 288,896
Int. Cl. F04b 23/10
U.S. Cl. 417—202 3 Claims



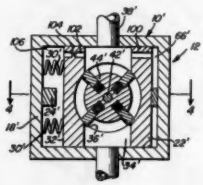
A hydraulic power steering system includes a main pump assembly which consists of two variable displacement reversible pumps of different sizes. These pumps are coupled to a common drive shaft so that they turn together and their displacements are controlled so that the output of the smaller is always a fixed proportion of the larger. A small fixed displacement hand pump is operated through means of the steering wheel and provides a flow to control the displacements of the two variable displacement pumps to place the latter in stroke. Output flow from the larger pump is connected to and provides the operating fluid for the steering motor. Output flow from the smaller pump is fed back to counteract the effects of the hand pump and return the two variable displacement pumps to their zero displacement positions once the turning of the steering wheel ceases. The amount of fluid pumped to the steering motor is thus proportional to the amount of fluid delivered by the hand pump.

3,813,189

LOW FLUID FLUID MOTOR

Leo L. Tompkins, 127 Wacaster, Jackson, Mich.

Filed May 24, 1972, Ser. No. 256,561
Int. Cl. F04b 49/00; F01b 25/00
U.S. Cl. 417—220 7 Claims



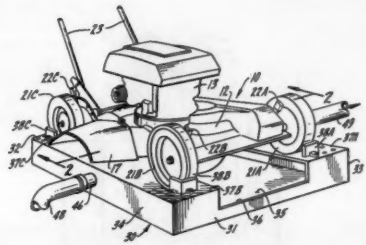
A sliding vane rotary fluid motor including a rotor cylinder shiftable laterally of the axis of rotation of the rotor between a first position generally concentric with the rotor axis and a second position eccentrically disposed relative to the rotor axis. Structure is provided for yieldingly biasing the cylinder toward its limit position concentric with the axis of rotation of the rotor and the cylinder defines a sliding partition within the housing of the motor with the partition closing one side of a fluid chamber within the motor housing. Rotor speed responsive fluid delivery structure is provided for ducting fluid under pressure from the intake of the motor into the chamber in response to a reduction in rotor speed to thereby overcome the biasing action acting upon the cylinder and shift the latter from its position concentric with the rotor axis toward its limit position of movement eccentrically disposed relative to the rotor axis.

3,813,190

EMERGENCY PUMP SYSTEM POWERED BY LAWNMOWER

Francis J. Keating, 44 E. North Ave., Lake Forest, Ill. 60045

Filed Dec. 4, 1972, Ser. No. 311,793
Int. Cl. F04b 17/00
U.S. Cl. 417—236 7 Claims



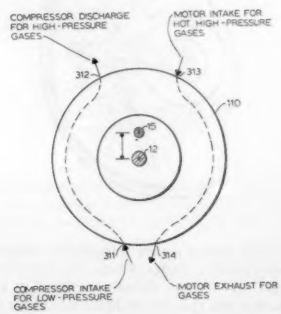
A high-volume pump system for emergency use (flooded basements, etc.) powered by a rotary lawnmower; the pump system comprises a base for supporting a lawnmower and a high-volume rotary pump mounted in the base below the lawnmower. A coupling adapter is included in the system and is fastened to the lawnmower blade; the coupling adapter connects the lawnmower to the pump to afford a short, direct driving connection for operating the pump.

3,813,191

ROTARY VANE DEVICE FOR COMPRESSOR, MOTOR OR ENGINE

Berry W. Foster, 2415 Thomas Ave., Redondo Beach, Calif. 90278

Continuation-in-part of Ser. No. 268,866, May 1, 1972, Pat. No. 3,747,573, which is a continuation of Ser. No. 41,008, May 22, 1970. This application Apr. 12, 1973, Ser. No. 350,632
Int. Cl. F04b 17/00
U.S. Cl. 417—406 2 Claims



An integral vane compressor and vane motor. At least three vanes are pinned to a central hub and extend through respec-

tive slots in a generally cylindrical drum with its axis parallel to and displaced radially from that of said hub, the slots guiding the radial position of the vanes. Synchronizing means, such as a gear train, cause the hub and drum to rotate in the same direction and at the same speed, with the vanes reciprocating and oscillating in the guide slots. A housing encloses the vanes and cooperates with them and the drum to provide a series of working spaces, one for each vane to compress or expand a fluid. Intake and exhaust ports lead fluid into and from the working spaces.

3,813,192

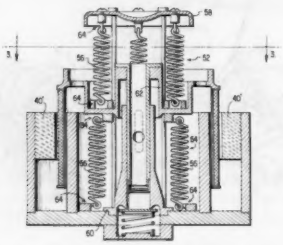
CENTERING SPRING ARRANGEMENT FOR OSCILLATORY COMPRESSORS

Glen O. Adams, and Owen H. Scheldorf, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Dec. 7, 1972, Ser. No. 313,153

Int. Cl. F04b *17/04*

U.S. Cl. 417—416 **3 Claims**



Those transverse loading forces deriving from the usual compression springs used to center the armature and piston of an oscillatory compressor are ameliorated, and in some cases eliminated, by the substitution of constantly tensioned, tension springs for the conventional compression springs.

3,813,193

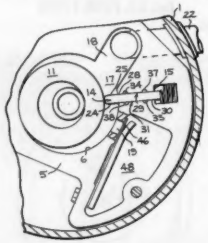
ROTARY COMPRESSOR INCLUDING MEANS FOR REDUCING VANE SLOT WEAR

Dean C. Rinehart, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed July 31, 1972, Ser. No. 276,724

Int. Cl. F01c *1/02*; **F04c** *1/02*, *17/02*

U.S. Cl. 418—63 **3 Claims**



A hermetically sealed rotary refrigerant compressor comprising a compression cylinder, a rotor eccentrically rotatable in the cylinder, and a vane slidably mounted in a slot in the cylindrical wall of the cylinder includes means for introducing high pressure refrigerant into the vane slot at wall areas of maximum slot wear and connecting wall areas opposite the areas of maximum wear to low pressure.

3,813,194

HYDRAULIC VANE MACHINE WITH CONTROLLED VANES

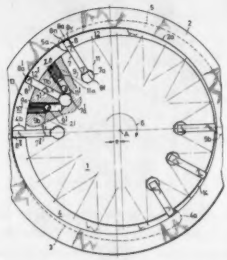
Joerg Scholz, Lohr, Germany, assignor to G. L. Rexroth GmbH, Lohr/Main, Germany

Filed Nov. 3, 1972, Ser. No. 303,633

Claims priority, application Germany, Nov. 20, 1971, 2157637

Int. Cl. F01c *21/00*

U.S. Cl. 418—82 **9 Claims**



The rotor of a vane pump or hydraulic motor, has vane slots in which the inner ends of vanes form bottom chambers, while the outer ends project from the rotor and form intervane space with the inner surface of a surrounding cam ring. Two throttles are mounted in the rotor on opposite sides of each vane slot and have inner ends communicating with the respective bottom chamber and outer ends communicating with two adjacent intervane chambers. When a vane passes through a flow reversing zone, different pressures prevail in the respective pair of leading and trailing intervane spaces so that fluid flows through the respective throttles and bottom chamber. In this manner, an intermediate gradually changing pressure acts in the respective bottom chamber to urge the vane outward to engage the cam ring.

3,813,195

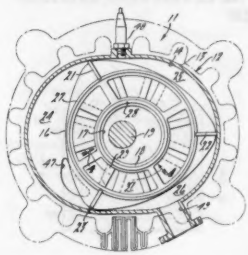
INDUCTION SYSTEM FOR ROTARY MECHANISM

Robert W. King, Sidney, Ohio, assignor to Copeland Corporation, Sidney, Ohio

Filed Mar. 6, 1972, Ser. No. 231,863

Int. Cl. F01c *21/06*; **F02b** *55/06*

U.S. Cl. 418—86 **4 Claims**



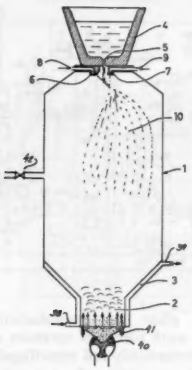
An induction system for a rotary piston machine in which a portion of the induction charge is passed through the rotary piston before induction into the chambers. The remainder of the intake charge is inducted directly into the chamber. This split induction system cools the rotary piston without undue heating of the total intake charge.

3,813,196

DEVICE FOR MANUFACTURE OF A POWDER BY ATOMIZING A STREAM OF MOLTEN METAL

Sven Hjalmar Backstrom, Borlange, and Per Hellman, Soderfors, both of Sweden, assignors to Stora Kopparbergs Bergslags Aktiebolag, Falun, Sweden

Division of Ser. No. 94,148, Dec. 1, 1970, abandoned. This application Jan. 18, 1973, Ser. No. 324,835
Claims priority, application Sweden, Dec. 3, 1969, 16675/69
Int. Cl. B22d 23/08
U.S. Cl. 425—7 5 Claims



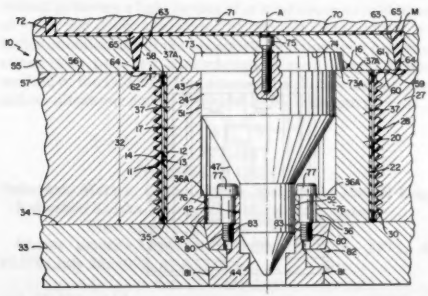
A device is provided for atomizing a molten metal stream whereby a first jet of an atomizing fluid is directed to a molten metal and a second jet is directed to the combined stream of the molten metal and first jet of atomizing fluid; the second jet impinges the combined stream at a certain angular relationship to the molten metal stream; as a result of the specific arrangement of the jets embodied in particular nozzles and their orientation, a fine, very uniform powder is obtained which consists of smooth, substantially spherical particles; the device is operational without any substantial splash-back and the amount of molten metal which may be atomized on basis of the fluid for operating of the jets constitutes an advantageous aspect of the device.

3,813,197

APPARATUS FOR MAKING AN ENDLESS POWER TRANSMISSION BELT

Robert L. Ray; William J. Champeau, and Kerry D. McAtee, all of Springfield, Mo., assignors to Dayco Corporation, Dayton, Ohio

Filed May 30, 1972, Ser. No. 257,496
Int. Cl. B29h 7/22, 3/08
U.S. Cl. 425—111 8 Claims



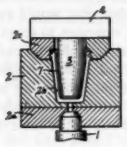
A molding apparatus and method for making an endless belt construction in an inverted position and having a precisely preloaded load-carrying section are provided. The apparatus employs a mold core defined by a plurality of movable L-shaped segments and means for applying radial forces against the segments in a plurality of spaced parallel planes perpendicular to a central axis therethrough to thereby move the segments radially outwardly and precisely position and hold such segments at a tension-applying location where their outer surfaces define a right circular cylindrical surface and the desired preloading on the load-carrying section.

3,813,198

APPARATUS FOR MAKING COMPOSITE PLASTIC ARTICLES

Emery I. Valyi, 5200 Sycomore Ave., Riverdale, N.Y.

Division of Ser. No. 211,289, Dec. 23, 1971, Pat. No. 3,737,259. This application Jan. 29, 1973, Ser. No. 327,626
Int. Cl. B29d 23/03
U.S. Cl. 425—112 7 Claims



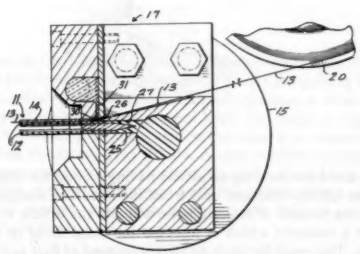
Apparatus for making pressure molded composite parisons and blown articles therefrom wherein preformed sleeves are placed mechanically over the blow cores used for molding the parisons.

3,813,199

APPARATUS FOR PRODUCING TRIM STRIP ASSEMBLY

Charles E. Friesner, Pemberville, Ohio, assignor to Industrial Plastic Specialties Company, Chelsea, Mich.

Division of Ser. No. 127,168, March 23, 1971, Pat. No. 3,780,152. This application Sept. 20, 1973, Ser. No. 398,988
Int. Cl. B29f 3/00
U.S. Cl. 425—113 16 Claims



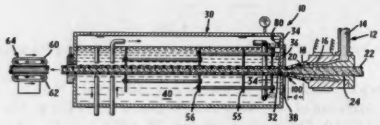
Apparatus for producing a trim strip assembly is disclosed. The trim strip includes a thermoplastic base member, a superimposed strip, and a plastic top coating. The superimposed strip may be of plastic, metal or foil. The apparatus includes extruders and a die having three passageways. A first passageway receives the extruded base member, a second passageway intersects the first passageway and receives the superimposed strip, and a third passageway intersects the second passageway a predetermined distance from the intersection of the first and second passageways.

3,813,200

JAM PREVENTION UNIT FOR EXTRUSION PROCESS APPARATUS

Alex S. Gergely, Richmond, Va., assignor to Phillip Morris Incorporated, New York, N.Y.

Filed Jan. 22, 1973, Ser. No. 325,595
Int. Cl. B29f 3/08
U.S. Cl. 425—140 10 Claims



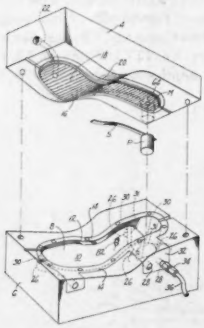
A device which can be used to prevent a jam of the sizing aperture in the cooling chamber of extrusion process apparatus is disclosed. The device includes a cutter blade which, when an outsized extrudate that would cause a jam of the sizing aperture is detected, operates to sever the extrudate entering the cooling chamber from that already present therein to prevent the outsized extrudate being drawn into the sizing apparatus or being pushed into the same by the extruder pressure. The device also functions to close off the aperture to prevent loss of the liquid coolant in the event of a jam.

3,813,201

SHOE MOLDS

Eugene G. Frederick; Albert I. Morse, Beverly, and Robert C. Simmonds, Jr., Topsfield, all of Mass., assignors to USM Corporation, Fleming, N.J.

Filed May 1, 1972, Ser. No. 249,130
Int. Cl. B29f 1/06
U.S. Cl. 425—242 7 Claims



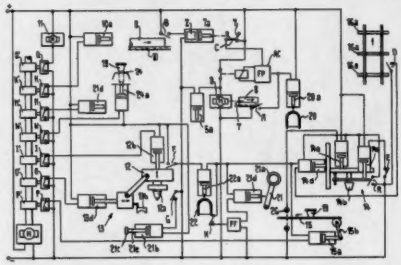
A mold for forming an article having a complex shape such as the unitary sole and heel tread member of a woman's shoe and the method of making same wherein the article to be cast is of a material which is injected into said mold in a liquid form. The mold for such articles is formed of first and second mold members defining a molding cavity therein, and at least one of the mold members in the cavity region has a portion which is formed of a heat-resistant rubbery elastic material such as silicone rubber. When the members are operatively assembled together for molding and one of the mold members may be adapted with a sprue for filling said cavity with the material for casting and conduit means disposed in at least one of said mold members extending from the opening in said cavity region through the mold member to the outside thereof. In preferred embodiments, said conduit means is adapted to be coupled to pressurized, fluid supply means.

3,813,202

AUTOMATIC PRODUCTION PLANT FOR FORMING WORKPIECES

Willi Rossler, Ersigen, Switzerland, assignor to Tonwarem-und Porzellanfabrik Rossler A.G., Ersigen, Canton of Berne, Switzerland

Filed Dec. 13, 1972, Ser. No. 314,501
Claims priority, application Switzerland, Dec. 27, 1971, 18952/71
Int. Cl. B28b 11/00
U.S. Cl. 425—404 3 Claims



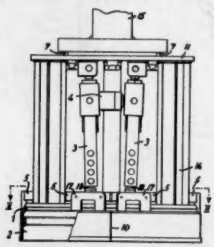
A production plant for manufacturing workpieces, preferably hollow work pieces of ceramics or other material comprising an automatically fed centrifugal mixer, an automatic feeding device consisting of a conveyor-band in feeding relation with said centrifugal mixer, at least one extruder-press with an associated storage bunker, an automatic press-charging equipment following said extruder-press, a press after said press-charging equipment to receive a blank from said equipment and to form the completed workpiece, a sequence-controlled delivery device following said press, a rocker-drier, an automatically controlled transfer station between said press and said delivery device arranged to bring the formed workpieces form said press to said rocker-drier, the improvement of providing means to render the production entirely automatic from the feed of the raw material up to the finished product.

3,813,203

DEVICE FOR MOLDING PIPE HAVING A SPIGOT END

Jens Erik Fisker, and Per Sondergaard, both of Brondersiev, Denmark, assignors to Pedershaab Maskinfabrik A/S, Brondersiev, Denmark

Filed May 24, 1972, Ser. No. 256,540
Claims priority, application Denmark, June 8, 1971, 2784/71
Int. Cl. B28b 11/08
U.S. Cl. 425—441 2 Claims



A spigot-end shaper has an inner ring and a concentric outer ring that is slotted and is radially expandable. In mold-

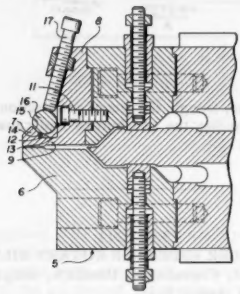
ing, the inner ring shapes the end face of the spigot and the outer ring shapes the spigot's outer wall, being clamped around the inner ring. In a mold-removing position, the outer ring is freely axially displacable away from the spigot end.

3,813,204

LIP ADJUSTMENT FOR EXTRUSION DIE

Robert B. Gregory, Flemington, N.J., assignor to G.K. Systems, Inc., Flemington, N.J.

Filed Feb. 28, 1973, Ser. No. 336,422
Int. Cl. B29f 3/00
U.S. Cl. 425—466 **5 Claims**



This invention is directed to an extrusion die having an adjustable lip provided across its outer face with a slot of generally J-shaped cross-section with an inner wall normal to the plane of extrusion and a planar angularly disposed outer wall. A rod of circular cross-section fits freely within the slot and rests against the inner and outer slot walls. Cap screws threadably carried by the inner supporting portion of the adjustable lip are provided to selectively apply point loading to the rod which in turn applies corresponding linear loading to the adjustable lip.

3,813,205

ULTRASONICALLY ETCHED PHOTOFLASH LAMP

Edward M. Clausen, Eastlake, Ohio, and Robert G. Clemmer, Madison, Wis., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 21, 1972, Ser. No. 308,425
Int. Cl. F21k 5/02
U.S. Cl. 431—94 **9 Claims**

A miniature photoflash lamp is provided having a hermetically sealed glass envelope which has been given a liquid etching treatment on the exterior surface to reduce thermal failure of the lamp by fracture of the glass envelope when the lamp is flashed. The present lamps can be further characterized as having a light output of at least about 12,500 lumen-seconds per cubic centimeter of internal lamp volume with better containment of the photoflash reaction than can be obtained with prior art construction of such lamps. A novel method of the liquid etching treatment is also described which utilizes ultrasonic energy to improve the treatment process.

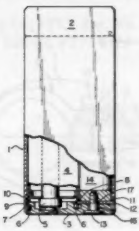
3,813,206

CIGARETTE LIGHTER

Nobuyoshi Moriya, Urawa, Japan, assignor to Mansei Kogyo Kabushiki Kaisha, Kawaguchi-shi, Saitoma, Japan

Filed Aug. 16, 1972, Ser. No. 280,993
Claims priority, application Japan, Oct. 5, 1971, 46-91379; July 25, 1972, 47-87732
Int. Cl. F23q 2/00
U.S. Cl. 431—143 **9 Claims**

A cigarette lighter, including a casing; an ignition mechanism; a fuel tank having an extension at its lower end; at least one through-bore formed in the extension of the fuel tank; and a fastening plate one end of which penetrates the throughbore. The fastening plate is fixed to a bottom plate of



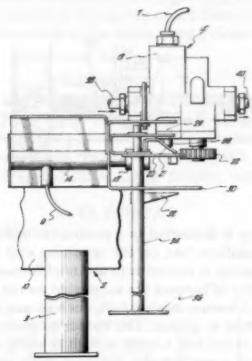
the casing by a screw member which is screwed through the bottom plate and the fastening plate into a female screw member disposed on the fastening plate.

3,813,207

GAS FIRED PATIO HEATER WITH A MANUAL IGNITER

Robert M. Ramey, North Hollywood, Calif., assignor to Teledyne, Inc., Los Angeles, Calif.

Filed Jan. 22, 1973, Ser. No. 325,422
Int. Cl. F23m 5/10
U.S. Cl. 431—255 **10 Claims**



A patio gas fired heater includes a burner element for supporting a gas flame and a manual igniter device for igniting the gas. A monitoring thermocouple element controls a valve so that the gas flow will be interrupted when the flame is extinguished. A manual override device on the valve is provided for superceding the monitoring device. A cam member controls both the manual override device and the igniter device to permit the cam member to activate both the igniter device and the manual override device while insuring the flow of gas to the burner element.

3,813,208

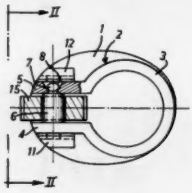
FLINT LIGHTERS WITH A ROTARY KNURLED WHEEL

Jean Gaston Malamoud, Annecy, France, assignor to S. T. Dupont, Paris, France

Filed Sept. 12, 1972, Ser. No. 291,831
Claims priority, application France, Sept. 13, 1971, 71.32945
Int. Cl. F23q 1/02
U.S. Cl. 431—277 **7 Claims**

In a flint lighter of the disposable type the rotary knurled wheel has a central bore by which it is mounted on a spindle or

elongated boss between a pair of deformable plastic holdfasts. One end of the boss is formed integrally with one holdfast and the other end is ball shaped and inserted into an opening in the other holdfast after the knurled wheel is placed on the boss.



Alternatively, the holdfasts can each be provided with a facing boss, each located in an opposite end of the bore, or the wheel may have a central boss projecting from each side and located in openings in the holdfasts.

3,813,209

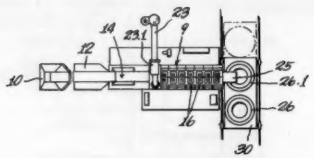
PREHEATING OF METAL SCRAP

Henry J. Venetta, 96 Howland Springs Rd., Warren, Ohio 44484

Filed Feb. 26, 1973, Ser. No. 336,032

Int. Cl. F27b *3/06*

U.S. Cl. 432—11 **14 Claims**



Metal scrap is deposited in a predetermined amount and in a generally uniform bed on the receiving end of a conveyor. The bed of scrap is moved into a tunnel furnace for preheating. A plurality of burners are supported on the top wall of the furnace, each burner mixing fuel, such as gas or oil, with air, and the mixture is ignited. The burner products, at high heat, jet from the respective burner at high velocity and down onto the scrap and penetrate the latter so as to quickly heat the scrap to required temperature. Smoke and fumes issuing from heated scrap are entrained by the jetting burner products and are largely consumed thereby.

The improved apparatus, and the method of operating the same, result in economies in capital investment, operating costs and plant space required, since the scrap is so quickly preheated that successive batches may be preheated and deposited into a charging bucket and subsequently delivered to a melt furnace, without any appreciable heat loss.

3,813,210

CEMENT KILN AND METHOD

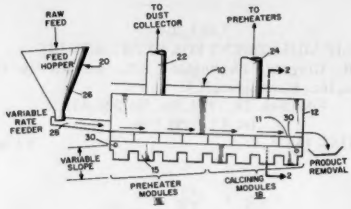
Gabor Miskolczy, Carlisle; Paul K. Shefsiek, Acton, and Pierre J. Brosens, Belmont, all of Mass., assignors to Thermo Electron Corporation, Waltham, Mass.

Filed July 26, 1972, Ser. No. 275,339

Int. Cl. F27b *15/00*

U.S. Cl. 432—15 **15 Claims**

A cement kiln incorporates a perforated floor for supporting an overburden of finely divided particulate material and preventing passage of the overburden through the perforations. Submerged beneath the particulate material, beneath the perforated floor, is a burner for directing products of combustion as jets through the mix. The cement kiln may be in the form of a rotary drum or an inclined stationary trough. In the



inclined stationary trough, the jets of combustion products at least partially fluidize the overburden and cause it to flow down the incline.

3,813,211

COOLER TUBES FOR ROTARY KILN

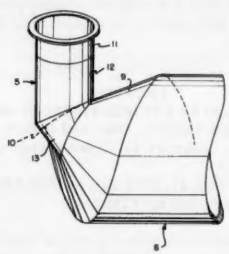
Hans Gommesen, Copenhagen, Denmark, assignor to S. L. Smith & Co., Cresskill, N.J.

Filed Sept. 13, 1972, Ser. No. 288,490

Claims priority, application Great Britain, Sept. 20, 1971, 43766/71

Int. Cl. F27b *7/20*

U.S. Cl. 432—80 **3 Claims**



An improved cooler tube construction for rotary kilns is disclosed which includes a conical internal surface located at the inlet end of each cooler tube. This conical surface acts to prevent back-spill and to advance material through the cooler tube.

3,813,212

ROTATING FLAME TREATER

Don L. Shofner, and Doyle L. Alexander, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

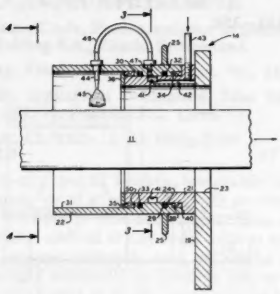
Filed Apr. 23, 1973, Ser. No. 353,506

Int. Cl. F27b *9/24*

U.S. Cl. 432—183 **10 Claims**

An elongated article, such as pipe, is moved through first and second concentrically mounted cylindrical sleeves. The inner sleeve is secured to a support frame while the second

sleeve is rotatably mounted on the inner sleeve and extends beyond the inner sleeve to support a gas burner for flame treating the exterior surface of the article. The inner sleeve is provided with an annular groove while the outer sleeve has a



mating passageway. The inner sleeve has a passageway connecting the annular groove to a gas supply conduit. The outer sleeve is provided with a conduit connecting the mating passageway to the gas burner. Means can be provided to extrude, flame treat and print the article in a continuous process.

3,813,213

FURNACE PLANT FOR THE DRYING OR BAKING OF COATED ARC WELDING RODS

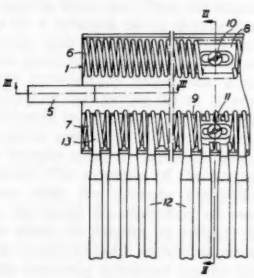
Karl Oskar Inge Jorneskog, Perstorp, Sweden, assignor to Elektriska Svetsningsaktiebolaget, Gothenburg, Sweden

Filed Mar. 19, 1973, Ser. No. 342,405

Claims priority, application Sweden, Mar. 30, 1972, 4244/72

Int. Cl. F27b 9/14

U.S. Cl. 432—121 **9 Claims**



A tunnel furnace plant for the drying or baking of coated arc welding rods in which the welding rods are suspended freely from straight carriers extending transversely to the direction of advancement through the furnace, each of said carriers carrying a row of welding rods. The plant also includes automatic equipment for fitting the welding rods to the carriers.

3,813,214

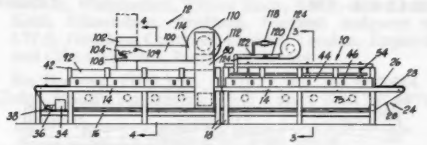
DRYING OVEN FOR LEAD BATTERY PLATES

Charles H. McAlpine, Coloma, Mich., assignor to Mac Engineering & Equipment Company, Inc., Benton Harber, Mich.

Filed May 14, 1973, Ser. No. 359,859

Int. Cl. F27b 9/28

U.S. Cl. 432—144 **6 Claims**



A conveyor advances newly formed battery plates with wet pellets of lead oxide and sulphuric acid in flatwise relation through an enclosure. Gas fired radiant heaters in the first half of the enclosure heat the upper surface of the plates to around 350° F. Air drawn from around the burners and the heated plates is drawn from the first half of the enclosure at about 275°F. This air is tempered or cooled to about 250°F by air drawn from the second half of the enclosure and recirculated into the second half of the enclosure where it is distributed over the surface of the heated plates. The output of the blower which circulates the air delivers to a regulating damper which exhausts about one-third the output of the blower and directs the remaining two-thirds to the recirculating circuit.

3,813,215

SUBJECTING SAMPLES TO ELEVATED TEMPERATURE

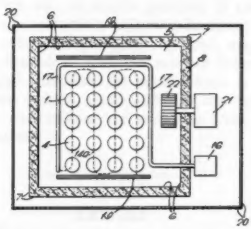
Henry Arthur John Ward, Essex, England, assignor to Electrothermal Engineering Limited, London, England

Filed July 30, 1973, Ser. No. 383,682

Claims priority, application Great Britain, Aug. 7, 1972, 36846/72

Int. Cl. F27b 5/02

U.S. Cl. 432—226 **8 Claims**



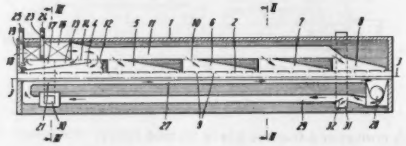
There is disclosed apparatus for use in subjecting samples to elevated temperature. The apparatus includes first chambers for receiving samples, part of each of the first chambers being within a second chamber which is out of communication with the first chambers and there being a third chamber which communicates by way of entrance openings with the first chambers, each first chamber having an exit opening, there being air in all the first, second and third chambers, an air inlet to the third chamber and means for heating the air. In use of the apparatus, heated air passes from the third chamber by way of the entrance openings into the first chambers, past the samples and out of the first chambers by way of the exit openings and heated air in the second chamber is in contact with the walls of the first chambers and heats them.

3,813,216

CONTINUOUS TUNNEL OVEN FOR BAKING AND/OR DRYING

Hellmuth Baur, and Horst Schraft, Stuttgart, both of Germany, assignors to Firma Werner & Pfleiderer, Stuttgart, Germany

Filed Sept. 25, 1972, Ser. No. 291,530
Claims priority, application Germany, Oct. 8, 1971, 2150191
Int. Cl. F27b 9/20
U.S. Cl. 432—230 7 Claims



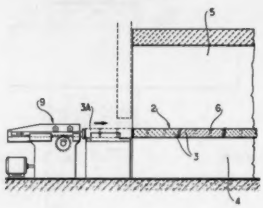
A continuous tunnel oven for baking and/or drying with a continuous baking belt heated from above and below, and with radiant heating provided exclusively below the baking belt, including heating-gas nozzles provided along the length of the baking chamber to blow the heating gas down vertically on the baked products. Heating of the baking belt from below is accomplished exclusively by means of radiant heating.

3,813,217

FURNACE FOR THE THERMIC TREATMENT OF PRODUCTS SUPPORTED BY A GAS CUSHION

Jean Moussou, Pouzac, France, assignor to Ceraver, Paris, France

Filed Mar. 2, 1972, Ser. No. 231,142
Claims priority, application France, Mar. 9, 1971, 71.08072
Int. Cl. F27b 3/12, 9/14
U.S. Cl. 432—258 3 Claims



Thermal treatment oven for products supported by a gas cushion, comprising a hearth provided with passages for the supporting gases, said hearth consisting of contiguous elements assembled longitudinally; the oven comprises, for example, a pushing device, giving the elements of the hearth a slow linear movement along its longitudinal axis.

CHEMICAL

3,813,218

TEMPORARY SUPPORTS, THEIR PREPARATION AND THEIR USE IN DRY DYEING AND IN DRY PRINTING BY HOT TRANSFER

Noel de Plasse, Croix, France, assignor to Sublistatic Holding S.A., Glaris, Switzerland

No Drawing. Filed Mar. 7, 1972, Ser. No. 232,507

Claims priority, application Switzerland, Mar. 10, 1971, 3,491/71; Feb. 2, 1972, 1,690/72

Int. Cl. B32b *15/10;* D06p *3/00*

U.S. Cl. 8—2.5 17 Claims

Strips, sheets or tapes of flexible, heat-stable material, preferably of paper or of paper backed with an aluminium foil, and characterized in that one of their faces is completely or partially covered in any order with at least two thin layers of organic materials, one, called the colored layer and consisting essentially of dyestuffs and/or optical bluing agents which pass in to the vapor state at between 160 and 220° C. at atmospheric pressure, and of binders which are stable in this temperature range and soluble in the organic solvents present in the inks used to form the colored layer, and the other layer consisting of an albuminoid material which is stable to heat in this temperature range, which can be sensitized to light when it is upon a colored layer and which is preferably non hardened when it is between the surface of the paper and a colored layer, and a process for dry dyeing synthetic materials, characterized in that said supports are applied to the material to be dyed or printed and in that the whole is heated at between 180 and 210° C.

3,813,219

PROCESS FOR THE THERMAL STABILIZATION OF POLYACRYLONITRILE FIBERS AND FILMS

Andrew H. Di Edwardo, Parsippany, and Klaus H. Gump, Gillette, N.J., assignors to Celanese Corporation, New York, N.Y.

No Drawing. Filed Apr. 28, 1972, Ser. No. 248,371

Int. Cl. C01b *31/07;* D06c *7/04*

U.S. Cl. 8—115.5 19 Claims

An improved process is provided for the production of stabilized acrylic fibers and films. Stannous chloride is incorporated in a solution of an acrylic polymer prior to forming from said solution a fibrous material or film wherein the pendant nitrile groups present in the acrylic polymer are substantially uncyclized, and the acrylic fibrous material or film having 0.5 to 10 percent by weight stannous chloride incorporated therein is heated in a gaseous atmosphere contining 30 to 100 percent by weight molecular oxygen until a stabilized fibrous material or film is formed. The presence of the stannous chloride in combination with the gaseous atmosphere containing more than the usual concentration of molecular oxygen (e.g. 10 to about 20 percent by weight) has been found to result in a substantially improved process. More specifically, the resulting stabilized acrylic fibrous materials and films exhibit enhanced physical properties (i.e. strength and modulus), and the stabilization reaction is accelerated in a controlled manner in the substantial absence of undesirable fiber coalescence. The resulting stabilized fibrous material or film is non-burning, and may be utilized as a fire resistant fiber, fabric, or film, or optionally carbonized or carbonized and graphitized to form a carbonaceous fibrous material or film.

3,813,220

PROCESS FOR MODIFYING KERATINOUS MATERIAL, COMPOSITION USEFUL THEREIN, AND KERATINOUS MATERIAL BEARING THEREON SAID COMPOSITION

Ladislav Benisek, Burley-in-Wharfedale, Kenneth Winterbottom, Whittlesford, Trevor Shaw, Ilkley, and Gerald Keith Edmondson, Bradford, England, assignors to I.W.S. Nominee Company Limited, London, England, and Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Dec. 13, 1971, Ser. No. 207,554

Claims priority, application Great Britain, Dec. 14, 1970, 59,356/70

Int. Cl. D06m *3/02, 3/06, 13/28*

U.S. Cl. 8—127.6 22 Claims

The present invention relates to a process for modifying keratinous fibres, and in particular, to a process for rendering keratinous textile materials resistant to shrinkage and to a process for imparting durable press characteristics to such materials.

This process comprises heating the material with a polythiol and an aliphatic polyamine-epichlorohydrin resin, and curing the polythiol on the material. The present invention also relates to (1) a composition useful in said process, which composition consists essentially of a polythiol and an aliphatic polyamine-epichlorohydrin resin, and (2) keratinous material bearing thereon a polythiol, in the cured or still curable state, and an aliphatic polyamine-epichlorohydrin resin.

3,813,221

DRY CLEANING METHOD

Marcella C. Stubits, St. Louis, Mo., assignor to Anheuser-Busch, Incorporated, St. Louis, Mo.

No Drawing. Filed Jan. 24, 1972, Ser. No. 220,451

Int. Cl. D06l *1/22*

U.S. Cl. 8—142 2 Claims

This disclosure relates to a method of cleaning rugs, furniture, fabrics, etc., in which granules of carbohydrate fatty acid esters, preferably cellulose laurate, are treated with a hydrocarbon solvent cleaning fluid, applied to the article to be cleaned so that the solvent from the granules loosens and dissolves the stain which is picked up by the granules (which also re-absorb the solvent) and both the stain and solvent are removed from the article with the granules.

3,813,222

METHOD OF DETERMINING OVULATION TIME IN URINE AND FERTILITY IN FEMALES

J. R. La Vietes, Belle Harbor, N.Y., assignor to La Mar Laboratories, Inc.

Filed Oct. 14, 1971, Ser. No. 189,249

Int. Cl. G01n *31/22, 33/16;* G07c *87/48*

U.S. Cl. 23—230 B 10 Claims

The presence of anterior pituitary hormone in mammalian urine, blood, serum or plasma is determined by mixing with the urine, blood, serum or plasma a test quantity of a stable solution of 2-4, dinitrophenylhydrazine and an aqueous solution of an alkali metal hydroxide and then comparing the color of the solution with a control color.

3,813,223

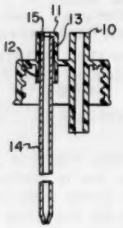
SCREW-ON TYPE CLOSURE FOR A BUBBLER TUBE

Elmer E. Fleck, Gibsonia, Pa., assignor to Chemed Corporation, Cincinnati, Ohio

Filed May 7, 1973, Ser. No. 357,860

Int. Cl. B01l 3/14; B65d 47/32

U.S. Cl. 23—259 7 Claims



A screw-on type closure for a bubbler tube having integral inlet and outlet tubes. An elongated tubing is seated in one of the inlet and outlet tubes and extends into the body of the bubbler tube.

3,813,224

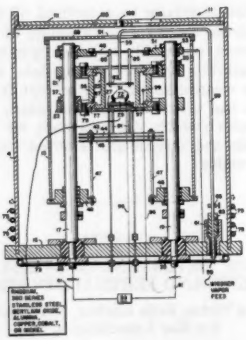
WHISKER OVEN AND METHOD

Edward F. Hollander, Jr., Broomall, Pa., assignor to John P. Glass, trading as Cava Industries, Essington, Pa.

Original application July 17, 1969, Ser. No. 842,560, now Patent No. 3,664,813. Divided and this application Dec. 27, 1971, Ser. No. 212,353

Int. Cl. B01j 17/28

U.S. Cl. 23—273 SP 13 Claims



An oven for making whiskers from a vapor comprising a housing containing a chilled base plate, a first and second support post extending upwardly from the base plate, an upper and lower support plate mounted on the posts, a hollow heating element mounted between the support plates, and a stage within the heating element for supporting a substrate on which whiskers are grown. The substrate is covered with rhodium, and may be made of a material selected from the group consisting of stainless steel, beryllium oxide, alumina, copper, cobalt, and nickel. The method includes placing a substrate in a whisker deposition zone of whisker vapor, and depositing and growing whiskers on the substrate. The method also includes cooling the bottom of the whisker deposition zone to form convection currents of vapor passing upwardly through the zone, and feeding the vapor downwardly into the whisker deposition zone to clash with the upwardly flowing vapor convection currents and form a turbulence in the whisker deposition zone. A rotatable drum positioned below a nucleating zone in the oven and having a pocket that receives the substrate. A rack gear operated by a motor with a clutch moves the substrate from the nucleating zone to the drum pocket, and a motor gear system rotates the drum to wind the whiskers in the form of a roving onto the drum so that courses of a succeeding layer of roving lie between courses of the next preceding layer having courses running in the same direction.

3,813,225

FLUIDIZED SOLIDS REACTOR WITH REFRACTORY LINING

Richard S. Cook, New Martinsville, W. Va., assignor to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Original application Mar. 10, 1969, Ser. No. 805,822, now abandoned. Divided and this application Sept. 20, 1971, Ser. No. 182,138

Int. Cl. B01j 1/20

U.S. Cl. 23—284 10 Claims

Fluidized solids reactor, e.g., a fluid bed chlorinator having a refractory brick lining that utilizes finely-divided refractory metal oxide powder to fill the joints between bricks is described. Optionally, the hidden faces of the brick have a coating of the refractory metal oxide powder.

3,813,226

THERMO REGULATED CATALYTIC CLEANER FOR EXHAUST GAS

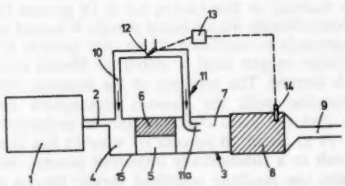
Herbert Heitland and Peter Manderscheid, Wolfsburg, Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed June 12, 1972, Ser. No. 262,005

Claims priority, application Germany, June 11, 1971, P 21 28 989.4

Int. Cl. B01j 9/04; F01n 3/14

U.S. Cl. 23—288 F 6 Claims



Arrangement for cleaning exhaust gas comprising, an input conduit for coupling the cleaning arrangement to the combustion engine and passing the exhaust gas from the engine to the cleaning arrangement which includes in the flow direction of the exhaust gas an ante-chamber in which the input conduit terminates, a thermal reactor for oxidation of the exhaust gas placed downstream with

respect to the flow of exhaust gas coming from the input conduit, a first catalysator for the reduction of the components of the exhaust gas and placed parallel with the thermal reactor with respect to the direction of flow of the exhaust gas, a second chamber following adjacent the first catalysator and thermal reactor in the downstream direction, a second catalysator operating at high temperatures and following the second ante-chamber in the downstream direction and having an output emitting the exhaust gas in cleaned condition to the atmosphere, a source of secondary or control air having a first input conduit and a second input conduit, a device selectively controlling the flow of the secondary air to the first input conduit and to the second input conduit, the first input conduit being coupled to the ante-chamber at a region such that when the secondary air is flowing therethrough the secondary air diverting flow of the exhaust gas to the thermal reactor placed offset with respect to the location of the exhaust gas input conduit the exhaust gas flows to the first catalysator substantially lying in the input direction of the exhaust gas when the first input conduit is closed by the selectively controlling device, a sensor for sensing the temperature of the second catalysator and when a predetermined operating temperature is sensed producing a signal causing operating device of the controlling means for diverting the secondary air flow to the second input conduit and thereby causing an acceleration of the air through the first catalysator to the second catalysator.

3,813,227

HARD, SINTERED GOLD-COLORED ALLOY OF TIN CEMENTED WITH Ti, Al, Cr AND Fe ALLOY BINDER

Chuji Tomita, Suwa, Kazutomo Kasai, Shimosuwa-machi, and Itaru Okonogi, Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

No Drawing. Filed Nov. 13, 1972, Ser. No. 305,759
Claims priority, application Japan, Nov. 12, 1971, 46/89,956
Int. Cl. C22c *29/00*
U.S. Cl. 29—182.5 **6 Claims**

A hard, sintered gold-colored alloy especially useful for costume jewelry and items which must withstand accidental abrasion is composed of TiN and an alloy of Ti, Al, Cr and Fe. The sintered material can be ground and polished to a higher luster and is exremely scratch-resistant.

3,813,228

LUBRICATING OIL COMPOSITION

Edward M. Geiser, Downers Grove, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed July 17, 1972, Ser. No. 272,585
Int. Cl. C10l *1/10*
U.S. Cl. 44—58 **10 Claims**

Lubricating oil for two-cycle or rotary engines which employ a lubricating oil-fuel mixture, containing the polymeric reaction product of an aliphatic amine and an epihalohydrin compound.

3,813,229

PROCESS FOR THE PRODUCTION OF A REDUCING GAS FOR BLAST FURNACE

Giorgio Pagani, Milan, Italy, assignor to Snam Progetti, S.p.A., San Donato Milanese, Italy

Filed Sept. 3, 1971, Ser. No. 177,630
Claims priority, application Italy, Sept. 3, 1970, 29,300/70
Int. Cl. C01b *2/14*
U.S. Cl. 48—196 R **7 Claims**

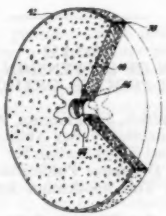
This invention relates to a process for the production of a reducing gas for use in a blast furnace said process comprising separately preheating a hydrocarbon fuel and separately preheating the supporter of combustion to be used in the partial combustion furnace where the reducing gas is produced to a temperature in the range of 800°–1500° C.; feeding the preheated supporter of combustion to the partial combustion furnace together with the fuel which has been preheated to at least 600° C.; cooling, if necessary, the obtained gases to a temperature suitable for introduction into the blast furnace and; feeding the gases to the blast furnace.

3,813,230

METHOD OF MAKING A POROUS LAMINATED METAL-BONDED CUTTING WHEEL

Harold W. Ferchland, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Application July 31, 1969, Ser. No. 850,314, now Patent No. 3,641,718, which is a continuation of abandoned application Ser. No. 751,479, Aug. 9, 1968. Divided and this application Oct. 27, 1971, Ser. No. 193,226
Int. Cl. B24d *7/10*
U.S. Cl. 51—297 **2 Claims**



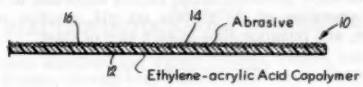
A cool running abrasive cutting tool having a working surface comprising a layer of diamond particles included in a heat-conductive matrix and a heat-dissipating region immediately subjacent the working surface. The heat-dissipating region is comprised of a highly porous material having a macro-porosity profile, an extended internal heat transfer surface area and preferably is formed from a metal having a thermal conductivity coefficient of at least about 0.05 g.-cal./(sec.)(cm.²)(° C./cm.). A particular electroplated diamond peripheral wheel is disclosed.

3,813,231

SANDPAPER

Ronald Edward Gilbert, Orange, Tex., and Richard Leo Monley, Jr., Kansas City, Kans., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed July 31, 1972, Ser. No. 276,574
Int. Cl. B24b *37/00*
U.S. Cl. 51—298 **4 Claims**



An improved flexible abrasive sheet and a process for producing the same is disclosed. The flexible abrasive sheet includes a backing of a copolymer of ethylene and acrylic acid having a melt index as determined by ASTM Test No. D1238–57T of from about 10 up to about 50 and contains from about 15 up to about 20 percent polymerized acrylic acid based on the weight of the co-

polymer, and an abrasive grit partially embedded in the ethylene-acrylic acid copolymer backing. The flexible abrasive sheet is free of any adhesive or bonding agent between the backing and the abrasive grit.

3,813,232
PROCESS FOR MAKING CARBON-CONTAINING GLASSES

Ray B. Forker, Jr., Horseheads, and Joseph N. Panzarino, Big Flats, N.Y., assignors to Corning Glass Works, Corning, N.Y.

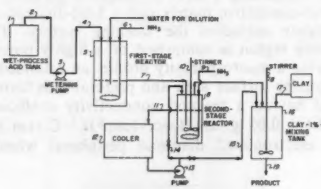
No Drawing. Filed Nov. 17, 1972, Ser. No. 307,464
Int. Cl. C03c 3/04, 15/09; H01b 1/06
U.S. Cl. 65—23 **9 Claims**

A process for making carbon-containing glasses from porous high-silica glass comprising the impregnation of the porous glass with acetophenone and sulfuric acid followed by a firing treatment to decompose the acetophenone to carbon and to consolidate the glass is disclosed. The process produces consolidated high-silica glass having a continuous carbon phase therein which is particularly useful for its uniform electrical properties, but is also characterized by high strength and improved refractoriness.

3,813,233
PRODUCTION OF SUSPENSION FERTILIZERS FROM WET-PROCESS ORTHOPHOSPHORIC ACIDS

Lucian A. Kendrick, Jr., Florence, Ala., assignor to Tennessee Valley Authority

Continuation-in-part of application Ser. No. 284,155, Aug. 28, 1972, now Defensive Publication T912,015, dated July 24, 1973. This application Apr. 23, 1973, Ser. No. 353,576
Int. Cl. C05b 7/00
U.S. Cl. 71—34 **11 Claims**



A process for preparing concentrated, high-grade N—P_2O_5 (e.g. 12–40–0) and mixed N—P_2O_5—K_2O (e.g. 14–14–14) suspension fertilizers with exceptionally satisfactory long-term storage properties from merchant-grade (50–54 percent P_2O_5) wet-process phosphoric acid or other impure phosphoric acids. The process involves ammoniation of the acid in two or more steps to reduce precipitation of amorphous materials derived from the impurities which have gel-like properties that destroy fluidity of the fertilizer products. Other factors important to successful operation of the process are pH, reaction temperature, and retention time in each step or stage.

3,813,234
ORTHO-TOLUIDINE PLANT REGULANTS

Robert K. Howe, Bridgeton, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Dec. 30, 1971, Ser. No. 214,463
Int. Cl. A01n 9/20
U.S. Cl. 71—76 **9 Claims**

Effective plant regulation is obtained by the application of a class of *o*-toluidines to plants.

3,813,235
HERBICIDAL ALIPHATIC OXAALKYL-2,4,5-TRIHALOGENO-IMIDAZOLES

Hans Rutz, Basel, and Kurt Gubler, Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Original application Apr. 24, 1968, Ser. No. 723,903, now Patent No. 3,625,953. Divided and this application Apr. 5, 1971, Ser. No. 131,448
Claims priority, application Switzerland, Apr. 26, 1967, 5,960/67
Int. Cl. A01n 9/22
U.S. Cl. 71—92 **2 Claims**

2,4,5,-trihalogeno-imidazoles substituted in 1-position at the imidazol nucleus by a group of the formula R—O—A— wherein R represents an optionally substituted aliphatic hydrocarbon radical and A represents an alkylene group, are described, which imidazoles are herbicidally active and useful in the control of weeds and the like undesirable plant growth; herbicidal compositions containing such imidazoles as active ingredients, and method of controlling undesirable plant growth with the aid of such compounds are also disclosed.

3,813,236
SUSTAINED RELEASE PESTICIDE COMPOSITIONS AND METHOD OF USING

George Graham Allan, Seattle, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

No Drawing. Continuation of application Ser. No. 832,464, June 11, 1969, which is a continuation-in-part of application Ser. No. 593,707, Nov. 14, 1966, both now abandoned. This application Dec. 28, 1970, Ser. No. 102,177
Int. Cl. A01n 9/08, 9/22
U.S. Cl. 71—94 **20 Claims**

Organic pesticides are chemically combined with an inert natural polymer substrate such as a lignin or lignin containing material, tree bark, cellulose or proteinaceous material. When exposed to environmental conditions the chemical bond between the polymer and the pesticide is broken by hydrolysis to yield a pesticidal amount of the free pesticide over an extended period of time.

3,813,237
HERBICIDE

Adolf Fischer, Mutterstadt, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed July 9, 1970, Ser. No. 53,661
Claims priority, application Germany, July 17, 1969, P 19 36 341.8
Int. Cl. A01n 9/24
U.S. Cl. 71—117 **4 Claims**

A mixture of a phenoxycarboxylic acid derivative and a biscarbamate or an acid anilide which has a good herbicidal action and a process for controlling unwanted plants in preemergence treatment with this mixture.

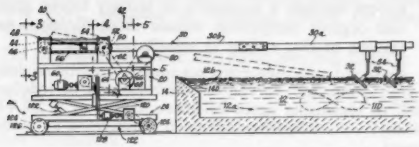
3,813,238
MECHANICAL PUDDLER

David Salmon, Frankfort, and Edward J. Wierzbicki, Lansing, Ill., Benny Langston, Crown Point, Ind., and Donald W. Beegle, Russellville, Ala., assignors to U.S. Reduction Company

Original application Oct. 9, 1970, Ser. No. 79,561, now Patent No. 3,703,340. Divided and this application May 24, 1972, Ser. No. 256,611
Int. Cl. C22b
U.S. Cl. 75—93 R **2 Claims**

A mechanical puddler for stirring a melt within a furnace and including an elongated member carried by a frame and having a stirring mechanism connected to a free end thereof with drive means cooperating with the member for moving the paddle in a closed loop having

a figure eight configuration. The frame is capable of being raised and lowered relative to the upper surface of the



melt and moved parallel to the surface to act as a mechanical skimmer.

3,813,239

CORROSION-RESISTANT NICKEL-IRON ALLOY

George Norman Flint and Thomas Ernest Evans, Solihull, and Anthony Christopher Hart, Sedgley, England, assignors to The International Nickel Company, Inc., New York, N.Y.

No Drawing. Filed Feb. 7, 1973, Ser. No. 330,250
Claims priority, application Great Britain, Feb. 16, 1972, 7,064/72
Int. Cl. C22c *37/00*
U.S. Cl. 75—122 **10 Claims**

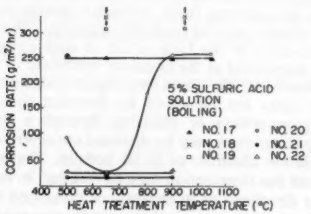
Alloy containing specially proportioned amounts of nickel, chromium, copper and molybdenum, and optionally niobium, along with iron is characterized by desirable combination of workability, resistance to crevice corrosion in chloride media and resistance to corrosion in acids.

3,813,240

CORROSION-RESISTING STEEL

Yoshihiko Abe, Tokyo, Japan, assignor to Mitsubishi Seiko Kabushiki Kaisha, Tokyo, Japan

Filed June 21, 1972, Ser. No. 264,985
Claims priority, application Japan, Mar. 3, 1972, 47/21,554
Int. Cl. C22c *37/10, 39/14*
U.S. Cl. 75—126 D **2 Claims**



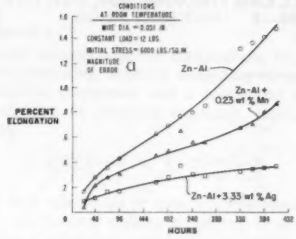
The corrosion-resisting steel with superb resistance to pitting corrosion is manufactured of a microstructural stainless steel composed mainly of chromium or chromium added with at least one of nickel and manganese still containing 10 to 30 percent by weight of chromium and further having 2 to 10 percent by weight of one or more carbonitrides selected from the group of titanium, zirconium, niobium, tantalum and vanadium uniformly and finely dispersed therein.

3,813,241

CREEP RESISTANT SUPERPLASTIC ALLOYS

Praveen Chaudhari, Briarcliff Manor, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of abandoned application Ser. No. 837,822, June 30, 1969. This application Dec. 3, 1971, Ser. No. 204,742
Int. Cl. C22c *17/00*
U.S. Cl. 75—178 A **6 Claims**



This disclosure provides creep resistant superplastic alloys by fabricating a primary superplastic alloy system and including therewith alloying additions which do not effectively alter the superplastic properties of the system at elevated temperatures and effectively reduce the creep rate at lower operational temperatures by precipitation of the alloying additions in the material. Illustrative examples of alloying additions for the Zn-Al superplastic alloy are the elements Ag and Mn. This alloy has superplasticity near 250° C. and has enhanced creep resistance at room temperature, e.g., 20° C.

3,813,242

PROCESS FOR IMPROVING A PHOTOSENSITIVITY OF AN ELECTROPHOTOGRAPHIC ELEMENT

Mitsusuke Ikeda, Hirakata, Hisanao Sato, Ibaragi, Etsuko Torii, Kyoto, Kazuhisa Morimoto, Settsu, and Yo Hasegawa, Suita, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan

Filed Oct. 1, 1971, Ser. No. 185,660
Claims priority, application Japan, Oct. 7, 1970, 45/88,434; Oct. 13, 1970, 45/90,354, 45/90,355
Int. Cl. G03g *13/22*
U.S. Cl. 96—1 R **3 Claims**

A process for improving the photosensitivity of an electrophotographic element which is comprised of conductive base, an organic photoconductive layer, and an organic sensitizer layer. The process comprises exposing the element to more than 10 lux seconds of visible light and uniformly charging the element to a negative potential of 200 to 1800 volts prior to charging the element with a positive charge and then exposing it to an image. The charging to a negative potential can be carried out prior to, simultaneously with, or subsequent to the step of exposing the element to the visible light.

3,813,243

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER

Nobuo Kitajima and Tatsuo Masaki, Tokyo, and Hideyo Kondo, Ibaragi-ken, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed July 10, 1972, Ser. No. 270,194
Claims priority, application Japan, July 12, 1971, 46/51,617
Int. Cl. G03g *5/00, 5/04*
U.S. Cl. 96—1.5 **1 Claim**

An electrophotographic photosensitive member is composed essentially of a support, a photoconductive layer and an insulating layer, and the photoconductive layer

being composed of a selenium layer at the support side and a selenium-tellurium layer at the insulating layer side.

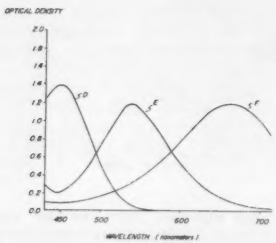
3,813,244

'ONIUM INDO-N-ARYLSULFOANILINE

George Villard, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed July 24, 1972, Ser. No. 274,719

Int. Cl. G03c *7/00, 7/16, 5/54, 5/24, 1/76, 1/40*
U.S. Cl. 96—3 **20 Claims**



'Onium indo-N-arylsulfoaniline compounds and processes of preparing them are disclosed. In one embodiment, improved photographic processes are described for forming indo-N-arylsulfoaniline dye images in photographic elements. Another embodiment relates to improved photographic elements containing 'onium indo-N-arylsulfoaniline image dyes. In yet other embodiment, image transfer systems and processes are disclosed wherein an 'onium-N-arylsulfoaniline image dye is formed during processing after imagewise exposure or wherein an o- or p-sulfonamidoaniline group is used to form the dye moiety, or dye precursor moiety of an image dye providing compound used in an image transfer system.

3,813,245

PHOTOCHROMIC COMPOSITION CONTAINING POLYHALOGENATED COMPOUND, SPIROPYRAN COMPOUND AND SENSITIZER AND THE USE THEREOF

Urbain Leopold Laridon, Wilrijk, and Jozef Willy van den Houte, Grimbergen, Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

No Drawing. Filed Sept. 1, 1971, Ser. No. 177,114

Claims priority, application Great Britain, Sept. 1, 1970, 41,749/70

Int. Cl. G03c *1/52, 5/24*
U.S. Cl. 96—48 R **21 Claims**

A photographic process wherein a visible image is formed by print-out or optical development in a recording material comprising in intimate admixture a spiropyran compound, an ultra-violet light-sensitive compound capable of producing on exposure with ultra-violet light with the spiropyran a dye salt and as sensitizing agent a compound selected from the group comprising:

(A) organic compounds containing two radicals of different electron-affinity including groups or atoms of different electron-affinity linked to each other through a conjugated system,

(B) organic compounds containing an aromatic nucleus or aromatic ring system in which two adjacent carbon atoms are common to said nucleus or ring system and to an adjacent ring which has no conjugated character and which at one end is linked to the aromatic nucleus or ring system through a carbon-carbon bond and at the other end is linked to said nucleus or ring system through a secondary or tertiary amino group, said organic compounds include those having a said nucleus or ring system in substituted form.

Preferred recording materials contain a spirodinaphthopyran compound, carbon tetrabromide and/or iodoform and as sensitizing agent Michler's ketone or a 2,2,4-trimethyl - 1,2-dihydroquinoline in polystyrene as binding agent.

3,813,246

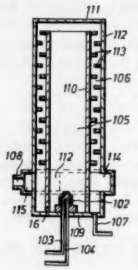
PROCESS FOR THE REOXIDATION OF PHOTOGRAPHIC BLEACHING AND BLEACH-FIX BATHS

Karl-Wilhelm Schranz, Odenthal-Hahnenberg, Wolfgang Hunicke, Gerhard H. Brus, and Erwin Schon, Leverkusen, Josef Busch, Bensberg, and Herbert Bruck, Leverkusen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 17, 1972, Ser. No. 235,529

Claims priority, application Germany, Mar. 20, 1971, P 21 13 651.6

Int. Cl. G03c *5/26, 5/32*
U.S. Cl. 96—60 BF **10 Claims**



Photographic bleaching and bleach-fixing baths are reoxidized by spraying them through a nozzle in the presence of oxygen into an oxidation chamber. The oxygen is provided either in the form of air or pure oxygen, which may be intermixed at the nozzle or contacted in the chamber atmosphere. The gases and liquid constituents of the sprayed baths are separated by directing them through baffled passageways or bubbling through a liquid. The baffled passageways may be disposed concentrically about the oxidation chamber or in its bottom. The nozzles for liquid and gas atomization may be directed in the same or opposite directions or in separate or combined nozzles. A liquid for bubbling separation may be concentrically disposed in a jacket about the bottom of the oxidation chamber into which the liquid and gaseous constituents are forced by excess pressure. The liquid is discharged from an overflow near the top of the jacket and the gaseous constituents are separated by bubbling through the jacket. Reoxidation may be performed directly within the bleach or bleach-fixing chamber and may be performed at the same time as the baths are sprayed upon the silver halide emulsion layers of an exposed photographic material. Silver salts are removed from the baths before they are sprayed, and the photographic material may form part of the wall of the chamber.

3,813,247

PHOTOGRAPHIC ELEMENT CONTAINING NON-DIFFUSING POLYMERIC DEVELOPMENT ACCELERATORS

Louis Morton Minsk and Jon Tewksbury Staples, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

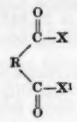
No Drawing. Filed Feb. 29, 1972, Ser. No. 230,471

Int. Cl. G03c *1/04, 1/08, 1/28*

U.S. Cl. 96—68 10 Claims

A polyester is disclosed which comprises the condensation product of:

(A) A bifunctional compound having the formula



wherein R is an alkylene group, a thia-alkylene group or a dithia-alkylene group and X and X^1 are independently selected and are —OH, —OR^1 where R^1 is an alkyl group, or a halogen, or are taken together and constitute an ether oxygen bridge completing a heterocyclic ring;

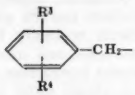
(B) A thia-alkylene glycol having an alkylene chain of 5 to 24 atoms including 1 or 2 thioether sulfur atoms or an oxathia-alkylene chain of 2 to 24 atoms which contains at least one oxygen atom and at least two sulfur atoms, each oxygen atom and sulfur atom being bivalently linked to adjoining carbon atoms; and

(C) A compound selected from the group consisting of:

(1) glycols of the formula

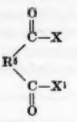
$$HO—R^2—OH$$

wherein R^2 is an arylenedialkylene group, an arylene-bis(thia-alkylene) group or an azaalkylene group of 5–11 atoms including at least one nitrogen atom having a

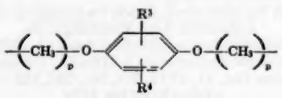


group attached thereto, R^3 and R^4 being independently selected from the group consisting of hydrogen, lower alkyl of 1–5 carbon atoms, lower alkoxy of 1–5 carbon and halogen; and

(2) a second bifunctional compound having the formula:



wherein R^5 represents the bivalent group:



X, X^1, R^3 and R^4 are as described above and *p* is an integer of from 1 to 6.

3,813,248

ORGANIC PHOTOCONDUCTIVE COMPOSITION COMPRISING AN ORGANIC PHOTOCONDUCTIVE COMPOUND AND A SENSITIZING COMPOUND HAVING AN ACTIVE METHYLENE GROUP

Kiyoshi Futaki, Hirokazu Tsukahara, and Kazuhiro Emoto, Kyoto, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

No Drawing. Filed June 10, 1971, Ser. No. 151,914

Claims priority, application Japan, June 10, 1970, 45/50,024

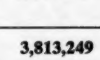
Int. Cl. G03g *5/00*

U.S. Cl. 96—1.5 19 Claims

An organic photoconductive composition, useful as an electrophotosensitizing material consisting of an organic photoconductive compound and a compound having an active methylene, as chemical sensitizer, represented by the formula,

$$R—COCH_2—X \text{ or } \underbrace{Z—COCH_2—Y}$$

wherein R is a substituted or unsubstituted phenyl, alkyl, arylamino, alkylamino, aryloxy or alkoxy; X is acyl, carbamoyl, phenyl-substituted carbamoyl or cyano; Y is carbonyl, oxygen, sulfur,



(wherein L is hydrogen or alkyl); Z is a residue necessary to form a 5- or 6-membered ring, and method for making the same.

3,813,249

LIGHT SENSITIVE PHOTOGRAPHIC MATERIAL

Aaron David Ezekiel, Elvin Frederick William Thurston, Michael Frederick Harper, and Malcom Barlow Wood, Ilford, England, assignors to Ilford Limited, Ilford, England

No Drawing. Filed Feb. 1, 1972, Ser. No. 222,663

Claims priority, application Great Britain, Feb. 4, 1971, 3,957/71

Int. Cl. G03c *1/02, 1/76*

U.S. Cl. 96—67 16 Claims

A photographic material comprising in at least one layer a water-soluble N-nitroso-oxime of the formula

(I)

wherein A represents a phenyl or naphth-1- or -2-yl radical or a phenyl or naphth-1- or -2-yl radical substituted by one or two members selected from hydrogen, alkyl having 1 to 5 carbon atoms, alkoxy having 1 to 5 carbon atoms, hydroxyalkyl having 1 to 5 carbon atoms, aralkyl and hydroxy and R is a cation as means for reducing spot formation is described.

3,813,250

SILVER HALIDE PHOTOSENSITIVE ELEMENT CONTAINING AN ANTIFOGGING COMBINATION OF A NITRATED HETEROCYCLIC COMPOUND AND A POLYMERIC STABILIZER

Yoshihiko Takamura, Yosuke Nakajima, Reiichi Ohi, and Takushi Miyazako, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami Ashigara-shi, Kanagawa, Japan

No Drawing. Filed Oct. 10, 1972, Ser. No. 296,492

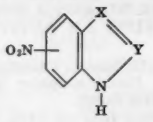
Claims priority, application Japan, Oct. 11, 1971, 46/79,979

Int. Cl. G03c *1/34*

U.S. Cl. 96—76 R 15 Claims

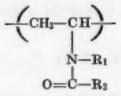
Anti-fogging agents for silver halide photographic emulsions consisting of a combination of (a) an nitrated

benzimidazole, indazole or benzotriazole compound represented by the general formula



(I)

where X and Y individually represent N or CR, wherein R represents a hydrogen atom or alkyl group containing 1 to 4 carbon atoms, and (b) at least one member selected from polymers containing greater than 50 mol percent of recurring units represented by the general formula



(II)

wherein R_1 and R_2 individually represent a hydrogen atom or an alkyl group containing 1 to 4 carbon atoms or form, when taken together with the nitrogen and carbon atoms to which they are attached, a 5- to 7-membered heterocyclic ring.

The anti-fogging agent may be incorporated in silver halide emulsion layers or in another layer adjacent to the emulsion layer to reduce fog in the emulsion layer without a sacrifice in the sensitivity of the photosensitive materials.

3,813,251

PEPTIZERS FOR PHOTOGRAPHIC EMULSIONS

Kenneth R. Hollister and Ernest J. Perry, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

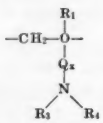
No Drawing. Filed Apr. 28, 1972, Ser. No. 248,442

Int. Cl. G03c *1/04*

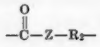
U.S. Cl. 96—114 **15 Claims**

A photographic silver halide emulsion contains a peptizer comprising a polymer consisting essentially of:

(A) About 3 to about 35 mole percent of units of the structure



wherein R_1 is hydrogen or a methyl radical, Q is

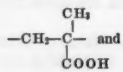


wherein Z is oxygen or =NH and R_2 is an alkylene radical of from 1 to 6 carbon atoms, x is zero or one, and R_3 and R_4 are either

(1) taken together and represent the atoms necessary to complete a 5 or 6 membered heterocyclic ring, or

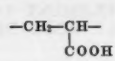
(2) are independently selected from the group consisting of alkyl radicals of from 1 to 8 carbon atoms, but only when x is equal to one;

(B) About 30 to about 92 mole percent of units of the structure



and

(C) About 5 to about 65 mole percent of units of the structure



3,813,252

SINTERED REFRACTORY MATERIAL

Alfred Lipp, Leubas, St. Mang, Germany, assignor to Elektroschmelzwerk Kempten GmbH, Munich, West Germany

No Drawing. Continuation-in-part of application Ser. No. 755,503, Aug. 19, 1968, which is a continuation of application Ser. No. 570,756, Aug. 8, 1966. This application Oct. 27, 1969, Ser. No. 869,925

Claims priority, application Germany, Aug. 11, 1965, E 29,885

Int. Cl. C04b *35/66;* **H01b** *1/06*

U.S. Cl. 252—520 **6 Claims**

The present invention relates to formed refractory articles of increased machinability prepared by including 10–20%, by weight, of boron nitride in refractories comprising a mixture of a material selected from the group consisting of aluminum nitride, silicon nitride, and aluminum boride and an electrically conductive material selected from the group consisting of graphite, boron carbide titanium carbide, zirconium carbide, chromium carbide, silicon carbide, titanium boride, zirconium boride, chromium boride, silicon boride, beryllium boride and calcium boride.

3,813,253

DRY MIXTURES FOR PRODUCING ACID-RESISTANT CEMENT AND MORTAR COMPOSITIONS

Helmut Neises, Kelkheim, Taunus, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Continuation of abandoned application Ser. No. 835,800, June 23, 1969. This application Oct. 1, 1971, Ser. No. 185,895

Int. Cl. C04b *19/03, 19/04*

U.S. Cl. 106—84 **2 Claims**

With the use of condensed aluminum phosphates as hardeners, a composition can be prepared which contains all the ingredients necessary for making acid-resistant water glass cements and mortars. The composition contains as essential ingredients an inert filler material, a water soluble alkali metal silicate and, as the hardener, an aluminum phosphate with a molar ratio of $P_2O_5:Al_2O_3=1.1$ to 3 which has been subjected to a thermal treatment by heating it in a first stage to at most 400° C. and in a subsequent stage to at most 750° C., the heating being continued in both stages until the weight remains constant. A workable water glass cement or mortar is obtained from such compositions by simply adding water. The necessary amount of water can be reduced and the workability improved by incorporating in the composition a non-ionic or anionic surfactant. For better storability the hardener or the alkali metal silicate are advantageously hydrophobized.

3,813,254

THERMOSETTING NON GELLED HYDROXYL-FUNCTIONAL COATING ON AN INKED METALLIC ARTICLE

Joseph M. Makhlouf, Mars, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Original application June 21, 1972, Ser. No. 155,274, now Patent No. 3,719,618. Divided and this application Oct. 11, 1972, Ser. No. 296,730

Int. Cl. B41m *1/24*

U.S. Cl. 117—12 **9 Claims**

Hydroxyl functional polymers can be produced by employing monomers derived from 12-hydroxystearic acid

and glycidyl acrylates or methacrylates and reacting said monomers with other unsaturated monomers, thus providing polymers that form suitable thermosetting compositions when the polymers are co-cured with various crosslinking agents or other resinous compositions.

3,813,255

ULTRAVIOLET-ABSORBING POLYMERS COMPOSITIONS AND FILTER

Marc Godfried Mannens, Mortsel, Jan Jaeken, Hove, Wilhelmus Janssens, Aarschot, and Jan Jozef Priem, Mortsel, Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

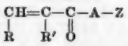
No Drawing. Original application May 17, 1971, Ser. No. 144,251, now Patent No. 3,761,272. Divided and this application June 4, 1973, Ser. No. 366,594

Claims priority, application Great Britain, June 9, 1970, 27,977/70

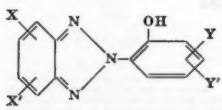
Int. Cl. G03c *1/84*

U.S. Cl. 117—33.3 **6 Claims**

The invention claims an ultraviolet-absorbing filter layer composition formed from an aqueous solution of a hydrophilic colloid having dispersed therein a hydrophobic copolymer obtained by emulsion polymerization of at least one α,β-ethylenically unsaturated monomer and of an ultraviolet-absorbing, solid, water-insoluble monomer of the formula:



wherein Z is H or Z', with Z' representing a substituted benzotriazole group of the formula:



R is H, —CH_3, —CN, —COOH or —COAZ'
R' is H, —CH_3, or —CH_2COAZ'
A is —O— or —NH
or A and R form together a cyclic imide group,
or A and R' form together a cyclic imide group,
A being bound to the substituted thiazole group of Z' via the carbocyclic phenyl group or via the carbocyclic benzo group.

The ultraviolet-absorbing filter layer composition may be used for the protection of light-sensitive photographic materials against ultraviolet light and for the production of ultraviolet filters and filter layers.

3,813,256

METHOD OF MAKING A HEAT RESISTANT, VAPOR FREE COOKING UTENSIL

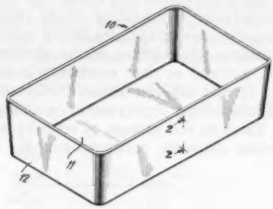
Robert S. Feinberg, Teaneck, N.J., assignor to Cryplex Industries, Inc., Flushing, N.Y.

Continuation-in-part of abandoned application Ser. No. 49,787, June 25, 1970. This application June 24, 1971, Ser. No. 156,298

Int. Cl. B65d *81/34*

U.S. Cl. 117—47 H **6 Claims**

A food-heating utensil is formed of a heat responsive gas or vapor releasing material such as paper or a thermoset cross-linked polyester substrate coated or encapsulated with a polysulfone resin, and is characterized by



the substantial absence of any gas or vapor release at high temperatures and excellent surface release properties.

3,813,257

COMPOSITE STRUCTURE AND METHOD OF PREPARING THE COMPOSITE STRUCTURE

James C. West, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Continuation of application Ser. No. 105,683, Jan. 11, 1971, which is a continuation of application Ser. No. 18,374, Mar. 12, 1970, which is a continuation of application Ser. No. 842,789, June 30, 1969, which in turn is a continuation of application Ser. No. 602,487, Dec. 19, 1966, all now abandoned. This application May 9, 1972, Ser. No. 251,627

Int. Cl. B44d *1/092*

U.S. Cl. 117—47 R **5 Claims**

A method of preparing a composite structure of a cured polyurethane adhered to a treated elastomer, which comprises the steps (A) treating the elastomer with freshly prepared chlorine water, (B) substantially drying the heated elastomer by evaporation, (C) applying a liquid polyurethane reaction mixture to the treated elastomer, and (D) curing the reaction mixture.

3,813,258

METHOD FOR EVAPORATING SILVER ON TITANIUM AND ITS ALLOYS

Helmut Pieper, Bremen, and Gustav Tober, Delmenhorst, Germany, assignors to Vereinigte Flugtechnische Werke-Fokker Gesellschaft mit beschrankter Haftung, Bremen, Germany

No Drawing. Filed Apr. 27, 1972, Ser. No. 247,952

Int. Cl. C23c *13/02*

U.S. Cl. 117—71 M **3 Claims**

Method of providing silver layers of high adhesive strength on titanium or titanium alloy surfaces, in that purest titanium is evaporated onto a titanium or titanium alloy surface; and subsequently nickel, copper and finally silver are evaporated thereon.

3,813,259

PREPARATION OF RESIN ENCAPSULATED CRUMB RUBBER

Terry C. Neubert, Kent, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Apr. 7, 1972, Ser. No. 242,022

Int. Cl. B44d *1/02*

U.S. Cl. 117—100 C **4 Claims**

A resinous, dust-free, semicontinuous, adherent coating-type partitioning agent for elastomeric crumb or

elastomer bonded particles is prepared by slowly adding together a dilute resin latex and a dilute coagulating agent (the elastomeric particulate being slurried in one or the other of these ingredients) at a temperature near or above the agglomerating temperature of the resin. Under these conditions, the resin coagulates slowly and is coincidentally deposited on the surface of the elastomeric particles, becoming sintered so that essentially none of the resin is free to form a separate phase. Preferred coating resins are styrenebutadiene copolymers containing at least 80% styrene. Three to ten percent of resin by weight of product provides adequate partitioning under normal conditions.

3,813,260

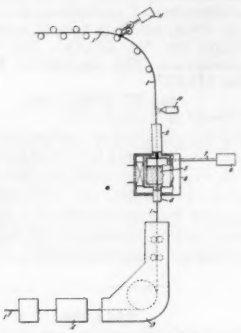
METHOD FOR PURGING DIP FORMING CRUCIBLE ENVIRONMENT

Norman Jay Lipstein, Schenectady, N.Y., assignor to General Electric Company

Continuation of application Ser. No. 99,690, Dec. 18, 1970, which is a continuation of application Ser. No. 871,593, Nov. 3, 1969, which is a continuation of application Ser. No. 633,325, Mar. 8, 1967, which in turn is a continuation-in-part of application Ser. No. 538,370, Mar. 29, 1966, all now abandoned. This application Feb. 7, 1972, Ser. No. 224,329

Int. Cl. C23c *1/10, 1/12*

U.S. Cl. 117—114 R **3 Claims**



In accreting molten material onto a continuous, elongated core, the core is passed upwardly through a crucible containing a molten bath of the material, and exits through an elongated tube extending upwardly from the crucible and is then cooled. An inert gas is introduced to the crucible above the molten material at a pressure sufficient to maintain a continuous flow of gas through the tube outwardly from the crucible, and coolant (e.g. water) penetrating the tube or crucible is atomized and/or vaporized and is conveyed concurrently with the gas stream.

3,813,261

TRANSPARENTIZED FIBROUS MATERIALS AND PROCESS FOR MAKING SAME

Peter Muller, Port Washington, N.Y., assignor to Andrews Paper & Chemical Co., Inc., Port Washington, N.Y.

No Drawing. Filed July 23, 1971, Ser. No. 165,692

Int. Cl. D21h *5/08*

U.S. Cl. 117—153 **4 Claims**

A transparentized fibrous material and process for its preparation is disclosed. A fibrous material is treated with an impregnating liquid containing a polyol having two or more hydroxyl functions part or all of which are etherified or esterified with radicals containing one or more ether or ester links and free hydroxyl groups, and also containing methylol derivatives of a polyamino compound together with a condensation catalyst. The impregnated fibrous material is cured by resination reaction *in situ* and immobilization of the impregnated material. A transparentized fibrous material results which is resistant to water, most organic solvents, and heat and is useful for use as tracing materials as well as a translucent base for sensitizing with reprographic coatings.

3,813,262

RESIN-IMPREGNATED TISSUE OVERLAYS

Ray T. Shelton, Kelso, and Ellsworth O. Jensen, Longview, Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

No Drawing. Original application Nov. 27, 1970, Ser. No. 93,427, now Patent No. 3,684,649, dated Aug. 15, 1972. Divided and this application June 12, 1972, Ser. No. 262,077

Int. Cl. D21h *1/40*

U.S. Cl. 117—155 UA **11 Claims**

Disclosed herein is a resin-impregnated tissue useful for overlaying various woody substrates. The tissue is impregnated with an aqueous composition comprising an emulsified thermosetting acrylic resin and a solubilized thermoplastic acrylic resin.

3,813,263

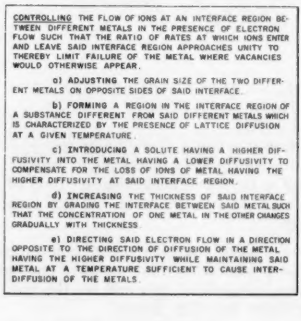
METHOD FOR REDUCING ELECTROMIGRATION DAMAGE AT METAL INTERFACES

Robert Rosenberg, Peekskill, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of abandoned application Ser. No. 837,778, June 30, 1969. This application Jan. 10, 1972, Ser. No. 216,864

Int. Cl. H01l *7/02*

U.S. Cl. 117—201 **20 Claims**


CONTROLLING THE FLOW OF IONS AT AN INTERFACE REGION BETWEEN DIFFERENT METALS IN THE PRESENCE OF ELECTRON FLOW SUCH THAT THE RATIO OF RATES AT WHICH IONS ENTER AND LEAVE SAID INTERFACE REGION APPROACHES UNITY TO THEREBY LIMIT FAILURE OF THE METAL WHERE VACANCIES WOULD OTHERWISE APPEAR.
a) ADJUSTING THE GRAIN SIZE OF THE TWO DIFFERENT METALS ON OPPOSITE SIDES OF SAID INTERFACE.
b) FORMING A REGION IN THE INTERFACE REGION OF A SUBSTANCE DIFFERENT FROM SAID DIFFERENT METALS WHICH IS CHARACTERIZED BY THE PRESENCE OF LATTICE DIFFUSION AT A GIVEN TEMPERATURE.
c) INTRODUCING A SOLUTE HAVING A HIGHER DIFFUSIVITY INTO THE METAL HAVING A LOWER DIFFUSIVITY TO COMPENSATE FOR THE LOSS OF IONS OF METAL HAVING THE HIGHER DIFFUSIVITY AT SAID INTERFACE REGION.
d) INCREASING THE THICKNESS OF SAID INTERFACE REGION BY GRADING THE INTERFACE BETWEEN SAID METAL SUCH THAT THE CONCENTRATION OF ONE METAL IN THE OTHER CHANGES GRADUALLY WITH THICKNESS.
e) DIRECTING SAID ELECTRON FLOW IN A DIRECTION OPPOSITE TO THE DIRECTION OF DIFFUSION OF THE METAL HAVING THE HIGHER DIFFUSIVITY WHILE MAINTAINING SAID METAL AT A TEMPERATURE SUFFICIENT TO CAUSE INTERDIFFUSION OF THE METALS.

A method for reducing electromigration damage at metal interfaces between interconnection lines and semiconductor contact materials is taught. The accumulation of excess vacancies in an interface region between two different metals is limited by controlling the flow of ions at the interface region in the presence of electron flow such that the ratio of the rates at which ions enter and leave the interface region approaches unity. By eliminating the accumulation of vacancies (which results in void formation) in the interface region, failure of the metal where vacancies would otherwise appear is avoided. The accumulation of excess vacancies is controlled in the operating environment where the two metals must carry current of relatively high density by adjustment of the

grain sizes of the different metals; by forming an additional region of another metal in the interface region which is characterized by the presence of lattice diffusion at a desired temperature; by introducing a solute having a higher diffusivity into one of the metals having a lower diffusivity; and by increasing the thickness of the interface region by either grading one metal into the other or by introducing another metal which adds to the thickness of the interface region.

Where vacancies occur as a result of interdiffusion at high temperature during bonding of two metals, directing the electron flow in a direction opposite to the direction of diffusion of the metal having the higher diffusivity controls the appearance of vacancies. Controlling the current density also controls the appearance of these vacancies which ultimately lead to catastrophic cracking at either the metal interconnection or at the metal contact material.

3,813,264

ELECTROCONDUCTIVE PAPER

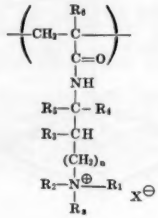
Jerry Emile Boothe, Pittsburgh, Andrew Jackson Sharpe, Jr., McMurray, and Kathleen Ann Seese, Carnegie, Pa., assignors to Calgon Corporation, Robinson Township, Pa.

No Drawing. Filed Mar. 22, 1972, Ser. No. 236,969

Int. Cl. B44d 1/00; G03g 7/00

U.S. Cl. 117—201 **4 Claims**

An electroconductive paper useful in making copies by an electrostatic process is made by incorporating therein an N-(alkyl ammonium)acrylamide polymer having about 90 weight percent units of the formula



where R_1 and R_2 are independently selected from linear and branched alkyl groups having up to 18 carbon atoms and aralkyl groups having up to 10 carbon atoms and in which R_1 and R_2 may be combined to form a heterocyclic group having one or more hetero atoms: R_3 is selected from the group consisting of hydrogen, lower alkyl groups of 1 to 4 carbon atoms and halogen; R_4 is selected from the group of hydrogen, halogen, and linear or branched alkyl groups of up to 5 carbon atoms; R_5 is selected from the group consisting of phenyl, lower alkyl groups of 1 to 4 carbon atoms and substituted phenyl wherein the substituents may be lower alkyl groups of 1 to 4 carbon atoms or lower alkoxy groups of 1 to 4 carbon atoms; R_3 or R_4 can combine with R_5 to form a cyclic group of at least 6 carbon atoms or a bicyclic group of at least 7 carbon atoms, which groups can be substituted with a linear or branched alkyl group having up to 5 carbon atoms; R_6 is selected from the group consisting of hydrogen and methyl; R_7 may be any group capable of quaternizing the nitrogen, preferably selected from the group consisting of hydrogen, benzyl, phenethyl, cyanoethyl, and linear, branched and substituted alkyl and aralkyl groups; $X^{\ominus}$ is any anion, especially halide, alkosulfate, tosylate, carboxylate, sulfonate, sulfate, phosphate, acetate, nitrate, etc.; and n is an integer of 0 to 2.

3,813,265

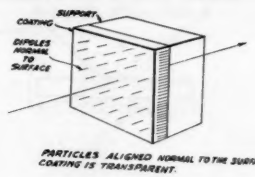
ELECTRO-OPTICAL DIPOLAR MATERIAL

Alvin M. Marks, 166—25 9th Ave., Whitestone, N.Y. 11357

Application Feb. 16, 1970, Ser. No. 11,696, now Patent No. 3,709,828, which is a continuation-in-part of application Ser. No. 378,836, June 29, 1964, now Patent No. 3,512,876. Divided and this application Mar. 23, 1972, Ser. No. 237,350

Int. Cl. F21v 9/00; G02f 1/18

U.S. Cl. 117—211 **31 Claims**



An article of manufacture is provided as a matrix having dispersed substantially uniformly therethrough a plurality of electro-optically responsive dipole particles selected from the group consisting of electrically conductive and semi-conductive material and dichroic crystals, the matrix being a transparent medium capable of being in the fluid state during the initial orientation of the dipoles, whereby the dipoles are capable of rotation to a desired preferred orientation upon the application of a force field, the medium being thereafter solidified. A method of applying the force field is disclosed.

ERRATA

For Classes 117—212 thru 156—254 see:
Patents Nos. 3,813,291 thru 3,813,315

3,813,266

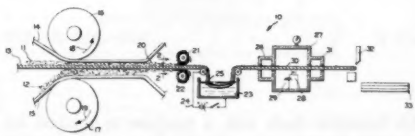
PROCESS FOR PRODUCING A CAPACITOR

Paolo della Porta, Tiziano Giorgi, Bruno Kindl, and Mario Zucchinelli, Milan, Italy, assignors to S.A.E.S. Getters S.p.A., Milan, Italy

Application May 1, 1970, Ser. No. 33,828, now Patent No. 3,654,533, which is a continuation-in-part of abandoned application Ser. No. 527,906, Feb. 16, 1966. Divided and this application Sept. 2, 1971, Ser. No. 177,450

Int. Cl. B44d 1/16; H01g 13/00

U.S. Cl. 117—212 **12 Claims**



A capacitor comprising:

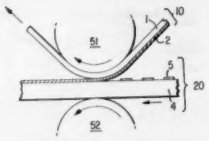
(a) A first capacitor plate comprising an electrically conductive substrate having electrically conductive particles partially embedded in at least one surface thereof;

(b) A dielectric comprising a thin, electrically non-conductive coating disposed entirely over the exposed portions of the particles and the substrate;

(c) A second capacitor plate comprising a continuous, electrically conductive coating disposed over the surface of the non-conductive coating.

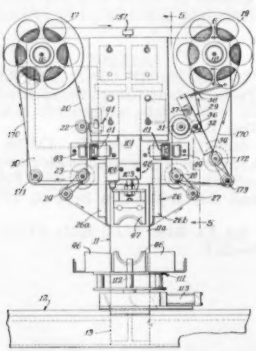
Processes for producing these capacitors are also described.

3,813,267
PROCESS FOR FIXING ELECTROPHOTOGRAPHIC IMAGES
Satoru Honjo, Osamu Fukushima, and Chiaki Osada, Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Dec. 29, 1971, Ser. No. 213,532
Claims priority, application Japan, Dec. 29, 1970, 46/121,453
Int. Cl. B44c *1/18*
U.S. Cl. 156—236 16 Claims



Electrophotographic images are fixed by applying thereto a fixing sheet comprising a supporting base and a clear adhesive resin layer, whereafter the adhesive resin layer is separated from the supporting base by heat and/or pressure and is thus allowed to transfer to surface bearing the toner image.

3,813,268
MACHINE AND METHOD FOR APPLYING INDICIA TO ARTICLES
Daniel Kerwin, Lombard, Ill., assignor to The Meyercord Co., Carol Stream (Wheaton), Ill.
Filed Aug. 19, 1971, Ser. No. 173,089
Int. Cl. B65c *9/18, 9/44*
U.S. Cl. 156—238 18 Claims

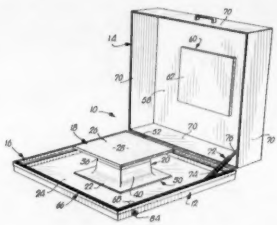


This invention deals with a machine or method for transferring decalcomanias (decals) from a rolled carrier web or strip to a series of articles. The machine supports a supply reel containing the web and transports the web from the supply reel, past a decal applying die, to a take-up reel, a feed roller being provided to drive the web. Brakes on opposite sides of the die are adapted to clamp the web, and a photoelectric device actuates the brakes to clamp the web when a decal on the web is in a transfer position in front of the die. A web tensioning mechanism is provided to hold the web under tension during application of a decal. This same mechanism may also be operated to adjust the position of the web so that successive decals are precisely at the transfer position. In instances where an interleaf or backing strip is provided on the supply reel along with a web, the machine removes the interleaf before the web reaches the die, and rewinds the interleaf with the web on the take-up reel.

3,813,269
METHOD OF MAKING FIBER GLASS THERMOPLASTIC SHEETS
Robert A. Molbert, Akron, Ohio, assignor to The General Tire & Rubber Company
No Drawing. Continuation-in-part of abandoned application Ser. No. 18,027, Feb. 26, 1970. This application July 20, 1972, Ser. No. 273,661
Int. Cl. B44d *1/95*
U.S. Cl. 156—272 6 Claims

Non-uniformity in the distribution of fibers in glass fiber reinforced thermoplastic sheeting has a deteriorating influence upon certain physical properties of the sheeting such as flexural modulus and tensile strength. Non-uniformity is caused by the inability of the viscous thermoplastic melt to penetrate into the fiber mat during manufacture. This invention is a method of making a glass fiber reinforced thermoplastic sheet utilizing powdered thermoplastics and static electricity phenomena to achieve a uniform distribution of fibers.

3,813,270
HEAT TRANSFER MACHINE
Clifford A. Hix and Daniel H. Hix, Pittsburg, Kans., assignors to Hix Automation Incorporated, Pittsburg, Kans.
Filed June 2, 1972, Ser. No. 258,959
Int. Cl. B32b *31/20*
U.S. Cl. 156—382 3 Claims

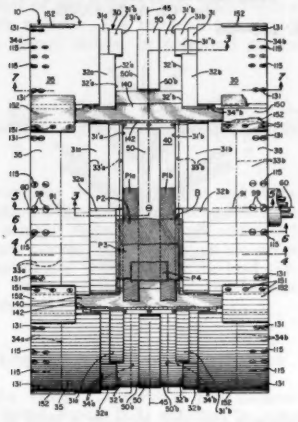


A device for effecting the transfer of an image from one piece of material to another in which a platen and a heating element are enclosed in a container such that when a vacuum is created therein the platen and heating element are drawn together to compress the materials therebetween and cause the image to be transferred. The platen and heating element are respectively affixed to a base and a cover of the container which are, in turn, interconnected by a hinge structure that permits the cover to move in a linear path of travel toward the base in response to the vacuum, thus avoiding fatiguing of the base and cover walls because of flexing.

3,813,271
BELT BUILDING DRUM
Robert S. Riggs, Stow, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed June 28, 1972, Ser. No. 266,897
Int. Cl. B29h *17/16, 17/20, 17/28*
U.S. Cl. 156—417 33 Claims

A segmented collapsible drum for building an endless inextensible belt assembly, optionally including a tread, for a tire. The drum features edge guides mounted in pairs on each segment of the drum. Pairs of the guides for a plurality of plies are disposed in alternating sequences about the drum and at differing radial heights above the drum surface to locate plies of differing widths

as they are wrapped successively about the drum. Pairs of guides spaced radially outwardly from the drum surface are movable axially to overlie a wider inner ply



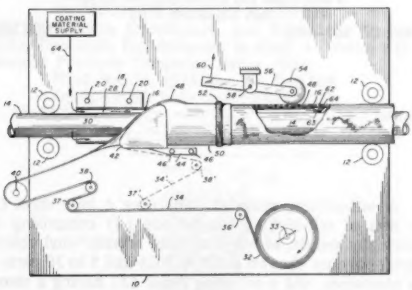
and to locate a narrower outer ply. These latter pairs can then be moved axially outward to allow collapse of the drum and removal of the completed belt assembly.

3,813,272

METHOD AND APPARATUS FOR SIMULTANEOUSLY APPLYING TO AN EXTENDED CYLINDRICAL OBJECT A COATING AND A PLASTIC FILM WRAPPING TO RETAIN THE COATING

Clemens F. Straughan, Tulsa, Okla., assignor to CFS Corporation, Tulsa, Okla.

Filed May 12, 1971, Ser. No. 142,452
Int. Cl. B29c *24/00*
U.S. Cl. 156—468 **9 Claims**



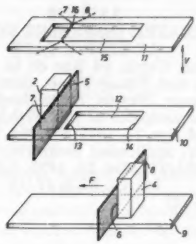
This invention involves the method and apparatus for simultaneously placing a coating of a selected material on the outer surface of an extended cylindrical object such as a pipe or conduit, and holding the coating in position by wrapping the coating with a strip of thin film formed to a cylindrical contour and sealed with a longitudinal seam. This is accomplished by inserting the pipe through a tubular concentric mandrel, wrapping and sealing the plastic film against the mandrel and injecting the coating material through the annular space between the pipe and the mandrel and thus into the space between the pipe and the sealed plastic film. Using heat shrinkable plastic the film forms a tightly fitting cover for the pipe coating material.

3,813,273

METHOD FOR CONSTRUCTING A HONEYCOMB STRUCTURE AND A DEVICE FOR CARRYING OUT SAID METHOD

Jean Loustau, 59 Avenue de Suffren, Paris 7eme, France

Filed Feb. 7, 1972, Ser. No. 224,102
Claims priority, application France, Feb. 10, 1971, 7104447; Apr. 4, 1971, 7116043
Int. Cl. B31f *1/00*
U.S. Cl. 156—469 **2 Claims**



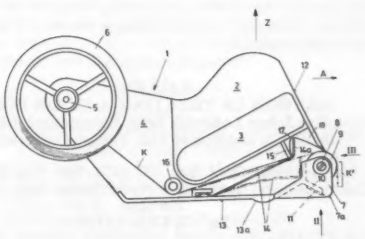
A method for constructing a honeycomb structure, comprising employing parallel lines of fixed abutments alternating with lines of movable punches which are parallel to each other and parallel to the lines of abutment and have an active face facing the active faces of the fixed abutment which face them in an adjacent line and a face facing the gap between the two fixed abutments of the other adjacent line of abutments, the lines of each kind carrying on said facing faces at least one longitudinal component element of the structure, moving the lines of movable punches toward the lines of fixed abutments in a direction perpendicular to the lines of punches and abutments until said component elements are united in the surface common to the facing faces, interconnecting the component elements in said common surface and separating the structure obtained from the abutments and punches.

3,813,274

HANDHELD APPLICATOR FOR ADHESIVE TAPE

Hansjörg Rothenberger, Sonnmatt, 9032 Engelburg, Switzerland

Filed Dec. 13, 1971, Ser. No. 207,347
Claims priority, application Switzerland, Dec. 17, 1970, 18,735/70
Int. Cl. B32b *31/18*
U.S. Cl. 156—527 **6 Claims**



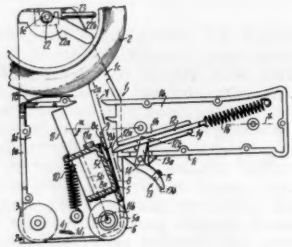
A handheld dispenser and applicator for tape coated with pressure sensitive adhesive of the type including a

supporting body provided with a handle, a tape reel, an exposed pressure roller, guides for guiding tape from the reel past the roller to an object to be taped during application of the tape under the manually generated pressure of the roller, and a blade for cutting the trailing end of the applied piece of tape, is provided with a leaf spring which engages a portion of the tape between the roller and the reel and laterally deflects the engaged tape portion as soon as the tension caused by application of the tape is relaxed when the trailing tape end is cut off. The leading end of the tape remaining on the applicator is thereby pulled back to the roller and is attached under the pressure of the roller during the next taping operation.

3,813,275
HAND-OPERATED DISPENSER FOR APPLYING ADHESIVE TAPE

Heinz Hermann Weick, 94 Rue de la Servette, Geneva, Switzerland, and Viktor Trueb, Oberhelfenschwil, and Walter Hesener, Meyrin, Switzerland; said Trueb and said Hesener assignors to said Weick

Filed Apr. 21, 1972, Ser. No. 246,312
Claims priority, application Switzerland, Apr. 28, 1971, 6,284/71; Mar. 23, 1972, 4,476/72
Int. Cl. B32b *31/18*
U.S. Cl. 156—527 **21 Claims**



A hand-operated dispenser for applying adhesive tape comprising a roughly T-shaped casing, the vertical bar of the "T" forming a hand grip, a bearing for rotatably supporting a roll of adhesive tape arranged in the area of one face of the cross piece of the "T," the other face of the T-shaped cross piece being adapted to be passed over the article to be taped, a cutting edge located in this face of the cross piece and next to this on the feed side of the tape a sliding member, which with its lower end projects beyond the casing for changing the direction of the tape and pressing it on the article to be taped, means for guiding the sliding member in the casing so that it can assume two positions in such a manner that the portion of the tape lying in the cutting area in one position of the sliding member is higher than the cutting edge, means for locking the sliding member in its lower position, manually operated release means for unlocking the sliding member.

3,813,276
METHOD OF TREATING A GLASS BODY

Hendrikus Johan Lodewijk Trap, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

No Drawing. Filed Apr. 25, 1972, Ser. No. 247,298
Claims priority, application Netherlands, May 29, 1971, 7107454
Int. Cl. C03c *15/00*
U.S. Cl. 161—1 **3 Claims**

A method in which the electrical conductivity of a glass is adjusted by means of an oxidizing or reducing treatment and in which subsequently a layer is etched off the glass surface.

3,813,277
CHRISTMAS TREE

Isaac Noe Kleiman, Fray Juan de Torquemada 157, Mexico City 8, Mexico

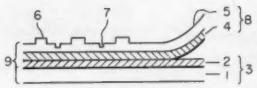
Filed Apr. 25, 1972, Ser. No. 247,268
Int. Cl. A47g *33/06*
U.S. Cl. 161—24 **1 Claim**

A Christmas tree that includes a stem or trunk supported in a conventional base, and a plurality of one-piece branch supports coupled to the trunk at different levels thereof, the supports being constituted by sleeves of a thermoplastic material or the like, wherein the outside parts of the supports have a plurality of symmetrically distributed cylindrical perforations with longitudinal axes parallel to that of the sleeve, tree branches being inserted in the perforations; the upper portions of the perforations terminate in radial slots of substantially rectangular cross section, that permit the folding and unfolding of the branches in relation with the stem.

3,813,278
SELF-STICKING MATERIAL AND A PROCESS FOR PRODUCING THE SAME

Keizo Katagiri, Mamoru Sakaguchi, and Tokumaro Kamata, Katsuta, Japan, assignors to Nippon Kakoh Seishi K.K., Tokyo, Japan

Filed Mar. 13, 1972, Ser. No. 234,047
Int. Cl. B32b *5/02*
U.S. Cl. 161—82 **18 Claims**



A self-sticking material comprising a base sheet (5), a film of self-sticking composition (4) comprising 100 parts, by weight, of ethylene-vinyl acetate/vinyl chloride graft polymer (known as EVA/VC) and 5 to 30 parts of a plasticizer, and a releasing paper (3) having a smooth surface. Said self-sticking material is used for preparing stickers and masking sheets and the like.

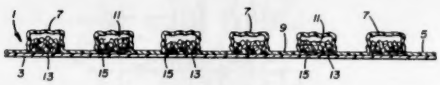
3,813,279
ELASTIC FOAM CARPET UNDERLAY

Lawrence C. Varner, Jr., % The General Tire & Rubber Co., P.O. Box 951, Akron, Ohio 44309

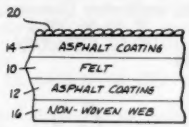
Continuation-in-part of abandoned application Ser. No. 98,506, Dec. 16, 1970. This application Apr. 27, 1972, Ser. No. 248,172
Int. Cl. B32b *3/28*
U.S. Cl. 161—127 **28 Claims**

A fireproof carpet underlay is provided which has improved load-deflection characteristics and yet can be

made at a fraction of the cost of conventional carpet underlay. The underlay is made from polyurethane foam scrap of low density (i.e., 1 to 3 pounds per cubic foot) and two thin sheets of inexpensive plastic material, such as polyethylene or polyvinyl chloride coated with a vinylidene chloride polymer. The underlay has a multiplicity of regularly spaced circular or polygonal pockets sandwiched between the two plastic sheets and containing a substantial amount of air and a fire-retardant liquid, such as water, in a major amount by weight sufficient for fireproofing. Each pocket functions as an air cushion and takes up a substantial proportion of the load (i.e., 20 to 50 percent) by compression of air, the balance being taken by compression of the foam.

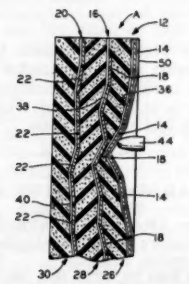


3,813,280
BITUMINOUS ROOFING PRODUCTS AND PROCESS
Bernard John Olszyk, Somerville, and Richard Leon Fricklas, Bound Brook, N.J., assignors to Johns-Manville Corporation, New York, N.Y.
Filed Sept. 9, 1971, Ser. No. 178,870
Int. Cl. E04d *5/10*
U.S. Cl. 161—151 **13 Claims**



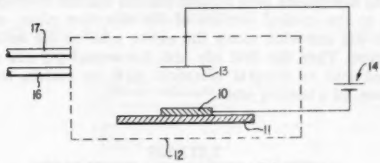
A non-woven fibrous web is affixed to the coating layer of hot bitumen commonly applied to roll or shingle form roofing products. The fibrous web prevents the products from sticking together when rolled or stacked.

3,813,281
COMPOSITE FLEXIBLE ARMOR
Lester E. Burgess, Swarthmore, and Ronald G. Brownstein, Broomall, Pa., assignors to Gulf + Western Industrial Products Company, Salem, Ohio
Filed Jan. 30, 1973, Ser. No. 328,100
Int. Cl. B32b *3/10, 5/20*; F41h *1/02*
U.S. Cl. 161—159 **9 Claims**



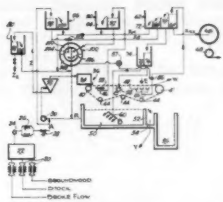
Layers of rigid platelets are separated by layers of compressible foam material having gas cells therein. A high velocity projectile striking a platelet in one layer compresses and forces gas from the cells in the foam material to absorb and dissipate kinetic energy.

3,813,282
LAMINATING PROCESS INCLUDING CATHODE SPUTTERING OF CARBON SUBSTRATE
Robert Masotti, Lyon, Jean-Philippe Rieux, Decines, Philippe Borrel, St. Martin le Vinoux, and Jean Lehureau, Lyon, France, assignors to Progil, Paris, France
Filed Dec. 29, 1971, Ser. No. 213,851
Claims priority, application France, Dec. 31, 1970, 7047731
Int. Cl. B32b *3/00, 5/02*
U.S. Cl. 161—164 **6 Claims**



A carbon substrate is subjected to superficial cathode sputtering to alter its surface characteristics. Carbon substrates thus treated are useful for the fabrication of various composite assemblies exhibiting improved physical properties, such as enhanced mechanical strength.

3,813,283
CONTROLLING DRAINAGE BY ADDITION OF LONGS AND FINES TO STABILIZE STOCK SYSTEM
John Christopher Urbas, 200 Comber Ave., Dorval, Quebec, Canada
Filed Mar. 10, 1972, Ser. No. 233,529
Int. Cl. D21f *1/60*
U.S. Cl. 162—190 **6 Claims**



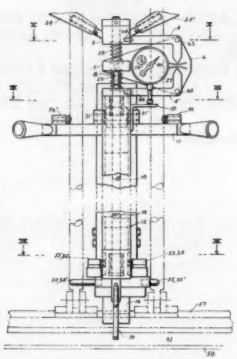
In a fourdrinier type papermaking machine having a plurality of interrelated material flows indicative of a state of equibrium, that equilibrium can be controlled by controlling one of the flows, namely the drainage flow. An actual drainage flow is metered and compared to a desired drainage flow and long or fine fibers are introduced into the mixed stock in a ratio determined by the comparison step to make the two drainage flows equal.

3,813,284
FIBROUS VIBRATION PLATE FOR LOUDSPEAKER AND PRODUCTION THEREOF
Yasuhiro Miki, Kawagoe, and Tadaki Kumanogo, Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan
Filed Apr. 19, 1972, Ser. No. 245,338
Claims priority, application Japan, Apr. 23, 1971, 46/26,078
Int. Cl. D21j *3/00*
U.S. Cl. 162—219 **5 Claims**

A vibration plate for a loudspeaker having an edge portion integral therewith is produced in such a manner that

a first ply having a flanged edge portion and a central conical portion and made into uniform thickness is fabricated by forming a first ply in a first mold comprising a molding portion of a configuration substantially equal to that of the vibration plate and provided with a number of suction holes evenly distributed over the molding portion, and a wire net extended along the entire area of the molding portion. A second ply having a mere conical portion and made into a uniform thickness is secondly fabricated in a second mold comprising a molding portion of a configuration substantially equal to that of the first mold but the suction holes being distributed over a mere portion thereof corresponding to the conical portion of the vibration plate, and a wire net extended along the entire area of the molding portion. Then the first ply and the second ply are combined into an integral vibration plate by means, for instance, of a heating press.

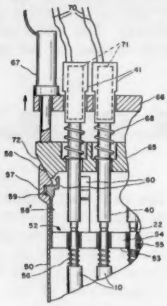
3,813,285
PAPER MACHINE HEADBOX SLICE OPENING GAUGE
Clifford D. Shelor, Tyrone, Pa., assignor to Westvaco Corporation, New York, N.Y.
Filed July 20, 1973, Ser. No. 381,270
Int. Cl. D21f *7/06*
U.S. Cl. 162—263 **4 Claims**



A portable apparatus readily attachable onto the adjusting screws of a conventional paper machine headbox for producing the cross-direction profile of a paper machine headbox slice opening accurately and with sufficient repeatability so as to render the measurement dependable within the limits required for the manufacture of a high quality paper web.

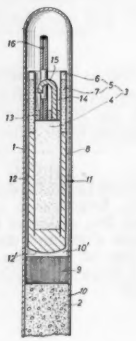
3,813,286
FUEL ELEMENT WITH FAILURE INDICATOR
Arthur J. Goldman, White Plains, N.Y., D. Garth Rowe, San Jose, Calif., and Cecil Roy Jones, Orange, Conn., assignors to Transfer Systems Incorporated, North Haven, Conn.
Filed May 8, 1972, Ser. No. 251,016
Int. Cl. G21c *17/06*
U.S. Cl. 176—19 R **6 Claims**

A novel fuel element for use in a power-generating nuclear reactor is described. The fuel element features a built-in indicator to indicate failure, and is especially adapted for use in a fuel assembly having a removable top closure. In a preferred embodiment, the indicator is a spring loaded movable pin which is displaced outwardly when the reactor is shut down by the internal element gas pressure. Should the element develop a leak, the



spring causes retraction of the pin indicator. A failure sensor is also described.

3,813,287
NUCLEAR REACTOR FUEL ELEMENT
Siegfried Malang, Karlsruhe-Waldstadt, Germany, assignor to Gesellschaft fur Kernforschung mbH, Karlsruhe, Germany
Filed Oct. 19, 1971, Ser. No. 190,541
Claims priority, application Germany, Nov. 17, 1970, P 20 *56* 392.2
Int. Cl. G21c *3/04*
U.S. Cl. 176—68 **3 Claims**

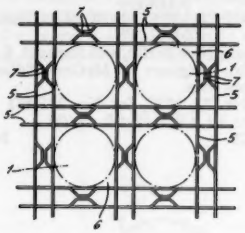


In a nuclear reactor fuel element containing a body defining one region in communication with the element fuel zone and another region containing a vaporizable fluid, the body is in the form of a cartridge separately inserted into the fuel element casing.

3,813,288
NUCLEAR REACTOR FUEL ASSEMBLY SPACER GRID
Bernard Leaver, Atherton, and Willard Mercer, Preston, England, assignors to United Kingdom Atomic Energy Authority, London, England
Filed June 29, 1972, Ser. No. 267,627
Claims priority, application Great Britain, July 7, 1971, 32,005/71
Int. Cl. G21c *3/34*
U.S. Cl. 176—78 **3 Claims**

A spacer grid in a fuel element assembly including a plurality of elongate fuel pins supported in a bundle with

their longitudinal axes parallel comprises intersecting strip members which extend in at least two directions between parallel rows of the fuel pins in the fuel element assembly, a closely spaced pair of the strip members extending parallel to one another between each row of the fuel pins and the next, the intersecting strip members defining a plurality of cells each penetrated by a fuel pin, and the fuel pins being laterally located in the fuel element assembly by contact with the walls of the cells.



3,813,289

ORGOTEIN FROM RED BLOOD CELLS

Wolfgang Huber, San Francisco, Silver H. Chow, Sunnyvale, and Mark G. Saifer, Berkeley, Calif., assignors to Diagnostic Data, Inc., Mountain View, Calif.

No Drawing. Continuation-in-part of application Ser. No. 273,277, July 19, 1972. This application Sept. 22, 1972, Ser. No. 291,320

Int. Cl. A61k *17/66*; C7g *7/4*

U.S. Cl. 195—4 **16 Claims**

Orgotein substantially free from hemoglobin and carbonic anhydrase is obtained from red blood cells by the steps of heating at least the red blood cell portion of blood at a pH from 5 to 8 at which the hemoglobin precipitates and at a temperature of about 60–80° C.; cooling the heated mixture; separating the precipitated proteins from an aqueous solution of the heated mixture; and separating the orgotein from the supernatant, e.g., by the addition of acetone to the cooled solution, by lyophilization, by ultrafiltration, or by adsorption on and elution from an ion exchange resin column.

3,813,290

GROWTH AND RECOVERY OF CELLS OF A HYDROCARBON-UTILIZING MICROORGANISM

Israel J. Heilweil and Sundaresa Srinivasan, Princeton, N.J., assignors to Mobil Oil Corporation

No Drawing. Continuation-in-part of abandoned applications Ser. No. 804,281, Mar. 4, 1969, and Ser. No. 804,298, Mar. 4, 1969. This application Apr. 10, 1972, Ser. No. 242,774

Int. Cl. C12b *1/00*

U.S. Cl. 195—28 R **9 Claims**

This specification discloses a process for the growth and recovery of cells of an aerobic, hydrocarbon-utilizing microorganism. The cells of the microorganism are grown in an oxygenated culture medium which is an emulsion of a hydrocarbon substrate and an aqueous mineral salt nutrient. The culture medium contains a nonionic surfactant to maintain the emulsion. The process involves a preliminary step of determining in an emulsion similar to that of the culture medium the proportion of the surfactant at which inversion of the emulsion occurs. In a subsequent step, the growth of the microorganism is carried out employing in the culture medium a proportion of the hydrocarbon substrate, aqueous mineral salt nutrient and the surfactant substantially equivalent to that at which inversion is attained. With this proportion of surfactant in the culture medium, the microorganism grows at an optimum rate and the cells thereof are readily separated and recovered from the culture medium.

3,813,291

METHOD OF MANUFACTURING A BARRIER LAYER FIELD-EFFECT TRANSISTOR

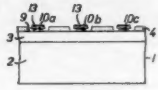
Vishnuprakash Joshi, Heilbronn-Bockingen, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed July 28, 1971, Ser. No. 166,667

Claims priority, application Germany, July 29, 1970, P 20 37 589.7

Int. Cl. H01l *7/50*

U.S. Cl. 117—212 **7 Claims**



A method of manufacturing a barrier layer field effect transistor comprises producing a contact making window in an insulating layer on a semiconductor body, which window is wider than the width of the control electrode to be produced, producing a metal layer at least in the window, covering the metal layer with a masking layer resistant to etching in the region of the window and of a width larger than the width of the electrode to be produced, etching away the excess metal from the metal layer and under etching the metal layer to produce a control electrode narrower than the masking layer.

3,813,292

METHOD OF DOPING THE SURFACE OF A METAL-OXYGEN COMPOUND

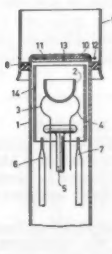
Alexander Hendrik Boonstra, Paulus Phillippus Maria Schampers, and Adriaan Netten, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 1, 1972, Ser. No. 230,695

Claims priority, application Netherlands, Mar. 6, 1971, 7103016

Int. Cl. B44d *1/14, 1/18*

U.S. Cl. 117—215 **10 Claims**



Doping of the surface of a metal-oxygen compound by exposure to and chemisorption of a reactive gas comprising an oxygen-replacing element is effected at such a low temperature that the adsorbed gas is not decomposed. A correct quantity of reactive gas being adsorbed then leads to discrete adsorption densities of less than 1. Used for shifting the photosensitivity of a lead monoxide target plate for a camera tube of the vidicon type to longer wavelengths.

3,813,293

METHOD OF APPLYING A SATISFACTORILY ADHERING, POORLY REFLECTING, CONDUCTIVE LAYER TO AN INSULATING SURFACE AND ELECTRIC DISCHARGE TUBE HAVING A LAYER APPLIED BY SAID METHOD

Johannes van Esdonk, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 856,160, Sept. 8, 1969. This application Nov. 3, 1971, Ser. No. 195,525

Claims priority, application Netherlands, Sept. 12, 1968, 6813017

Int. Cl. C23b 5/50, 5/64

U.S. Cl. 117—217 2 Claims

A smooth, conductive layer of poor reflectivity on an insulating surface is obtained by first applying a chromium-nickel layer from the vapor phase, to which layer is applied a nickel layer which is oxidized by heating in air at 250° C. to 500° C.

3,813,294

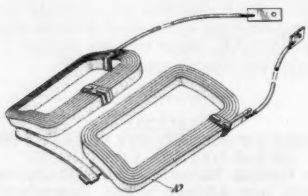
METHOD FOR INSULATING A PREFORMED ELECTRICAL COIL

Clarence H. Dyer, Pendleton, Conrad L. Gaunt, Anderson, and Edward D. Jarvis, New Castle, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 6, 1972, Ser. No. 231,836

Int. Cl. B44d 1/094, 1/14, 1/34

U.S. Cl. 117—218 1 Claim



A preformed electrical coil is heated and immersed in a bath of A stage epoxy resin. The coil is then immersed in a fluid bed of mica powder until the resin coating becomes impregnated with mica to the extent of approximately 45% mica. After the resin-mica coated coil is cured at a temperature determined by the curing temperature of the epoxy resin, it is immersed in a bath of A stage polyester resin. The polyester coated coil is again immersed in the fluid bed of mica powder to provide a mica coating thereon and is then dried at room temperature.

3,813,295

DIELECTRIC MATERIALS

Daniel W. Mason, West Peabody, Mass., and Henry H. Nester, deceased, by Dianne L. Nester, special administratrix, Gloucester, Mass., assignors to Owens-Illinois, Inc.

No Drawing. Original application June 5, 1970, Ser. No. 43,941, now Patent No. 3,707,499. Divided and this application May 8, 1972, Ser. No. 251,447

Int. Cl. C04b 35/00; H01b 1/06, 3/02

U.S. Cl. 117—221 3 Claims

A dielectric material is formulated by firing an admixture of from about 2–55% by weight zircon (zirconium silicate) and about 45–98% by weight of a lead barium borosilicate glass. In final form, the dielectric material exhibits a low K (approximately 6) and a high Q value. The paste composition is formulated by admixing the aforementioned ingredients in an organic vehicle, drying the paste and firing the paste at a temperature of from about 800–1,000° C. The paste is usually applied by a screen printing technique preferably using a mesh size in the range of about 165.

3,813,296

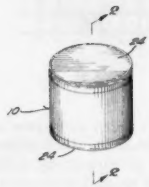
INSULATING COATING FOR ELECTRICAL DEVICES

Darrel D. McStrack, New Berlin, and James E. Schroeder, Greenfield, Wis., assignors to McGraw-Edison Company, Milwaukee, Wis.

Filed Nov. 23, 1971, Ser. No. 201,461

Int. Cl. C03c 17/00, 21/00

U.S. Cl. 117—229 14 Claims



An electrical insulating coating for a lightning arrester valve block includes a major amount of silicon carbide particles which have a bulk resistivity substantially higher than the resistivity of the electrically conductive portion of the valve block. The coating is prepared by admixing the silicon carbide particles, preferably green silicon carbide, with ceramic forming materials and sufficient water to form a mixture which can be applied as a coating to the device in a convenient manner. After the resistance device has been coated with this mixture, it is fired at an elevated temperature to mature the ceramic-forming ingredients and thereby form a hard, highly-adherent coating.

3,813,297

PROCESS FOR MAKING POTATO STARCH WITHOUT WASTE

Roy L. Shaw, Jr., East Grand Forks, Minn., assignor to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed June 7, 1972, Ser. No. 260,570

Int. Cl. C13l 1/02

U.S. Cl. 127—66 6 Claims

High quality potato starch is produced by fine grinding and air classifying cut and dehydrated potatoes to obtain a starch-enriched fraction and a protein-enriched fraction. The starch-enriched fraction is water washed in counter current fashion to remove protein, sugars, amino and other organic acids and obtain a high quality potato starch contaning less than 1.0% protein. The protein-enriched fraction from the air classification step is combined with the water from the counter current washing step to obtain, when dried, a product having a protein content of about 20 to 30%. This relatively high protein product is useful as a high quality animal feed supplement.

3,813,298

DUAL SCREENING PROCESS FOR SEPARATING STARCH PARTICLES AND FIBERS

Vincent P. Chwalek, 300 N. State St., Chicago, Ill. 60610

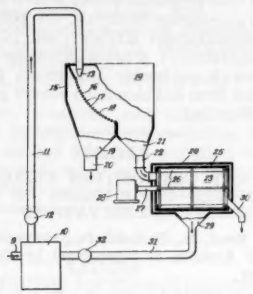
Continuation-in-part of abandoned application Ser. No. 99,486, Dec. 18, 1970. This application Apr. 27, 1973, Ser. No. 355,248

Int. Cl. C13l 1/00

U.S. Cl. 127—69 8 Claims

A continuous process for separating starch particles and fibers from an aqueous slurry containing said par-

ticles and fibers suspended therein which comprises: (1) passing a supply stream of said slurry over a screen bend having a slot width of such dimensions that a separation of starch from fiber is effected to obtain a first fraction comprising an aqueous slurry containing a major portion of the starch particles and which is substantially free of fiber, and a second fraction comprising an aqueous slurry containing in suspension, therein substantially all the fiber



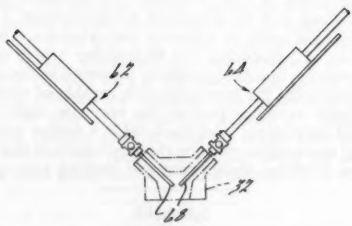
and a minor portion of the starch particles; (2) separating the second fraction into two components by centrifugally forcing said second fraction against a screen having openings of a dimension such that an aqueous component containing starch and fine fiber is separated from the fiber; (3) continuously recycling the aqueous component containing starch and fine fiber of step (2) to the supply stream of step (1); (4) recovering the first fraction of step (1) and the fiber separated in step (2).

3,813,299

METHOD AND APPARATUS FOR FLUSHING OIL PASSAGES IN ENGINE BLOCKS

George H. Bugor, Westland, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Mar. 22, 1972, Ser. No. 236,855
Int. Cl. B08b 9/04
U.S. Cl. 134—24 11 Claims



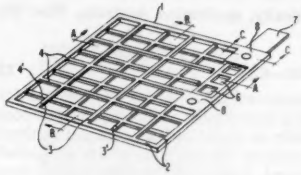
Method and apparatus for presenting high pressure cleaning liquid to the oil passages of an engine block to clean and flush them. The method includes introducing a flow of cleaning fluid into the oil galleries, plugging at least some of the oil passage openings in the front and rear portions of the block and again introducing cleaning fluid into the oil galleries.

3,813,300

PASTE-TYPE ELECTRODE BACKING PLATE FOR LEAD-ACID BATTERY

Shunji Shima, Hideyoshi Kadowaki, Eiji Muto, Ichiro Okazaki, and Koichi Matsumura, Kyoto, Japan, assignors to Japan Storage Battery Co., Ltd., Kyoto, Japan

Continuation of abandoned application Ser. No. 91,646, Nov. 23, 1970. This application Aug. 31, 1972, Ser. No. 285,278
Claims priority, application Japan, Feb. 12, 1970, 45/12,102; July 22, 1970, 45/64,607
Int. Cl. H01m 35/04
U.S. Cl. 136—38 7 Claims



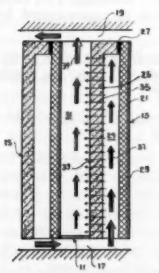
A backing plate for a paste-type electrode to be used for a lead-acid battery, comprising a plastic support or grid for an active conducting material and a current collector, the support being comprised of a frame and a plurality of crosspieces arranged in crisscross fashsion in the space surrounded by the frame, each crosspiece having a thickness less than that of the frame. The crosspieces are disposed so that the surfaces of the crosspieces facing opposite surfaces of the support are sufficiently spaced from the opposite support surfaces for receiving the active conducting material. The number of the crosspieces spaced from one surface of the frame is substantially the same as the number of the crosspieces spaced from the opposite surface of the frame, the crosspieces being substantailly uniformly arranged in the space defined by the frame. Also, the crosspieces spaced from one surface of the frame are disposed in the spaces defined by the crosspieces spaced from the opposite surface of the frame, and the surfaces between the crosspieces and the frame are continuous throughout the entire space within the frame.

3,813,301

PROCESS OF CHARGING AND DISCHARGING A METAL HALOGEN CELL

Peter Carr, Utica, Mich., assignor to Occidental Energy Development Company, Whitcomb, Madison Heights, Mich.

Filed Nov. 18, 1971, Ser. No. 200,062
Int. Cl. H01m 33/00, 29/00
U.S. Cl. 136—86 A 7 Claims



An electrode for use in an electrical energy storage device having an aqueous metal halide electrolyte com-

prising a first side of the electrode a second side whereby the first and second sides are attached thereby forming a channel for flow of the electrolyte therebetween and held in place by a conducting carbonized cement.

3,813,302

GRAIN-REFINING COMPOUNDS

Alexander Robley Morrison, Flat 8, 594 Inkerman Road, Caulfield, Victoria, Australia

No Drawing. Filed Nov. 2, 1971, Ser. No. 195,013

Claims priority, application Australia, Nov. 19, 1970, 3,250/70

Int. Cl. C23f 7/08

U.S. Cl. 148—6.15 R **12 Claims**

Novel improved compositions of titanium for use as grain-refining materials in zinc phosphating processes consist essentially of mixed orthophosphates of titanium and barium, strontium or calcium, which additionally form non-flocculated dispersions in water. The compositions may be prepared by a process in which titanium orthophosphate is precipitated in a dispersion of the divalent metal orthophosphate in water under specific limiting processing conditions. Alkaline metal-cleaning liquids containing the novel titanium compositions are also disclosed.

3,813,303

METHOD OF TREATING AN ALUMINUM SURFACE

Erich Hofling, Rudolf Baur, and Siegfried Bloeck, Kreuzlingen, Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

No Drawing. Filed Apr. 5, 1971, Ser. No. 241,406

Claims priority, application Switzerland, Apr. 14, 1971, 5,368/71

Int. Cl. C23f 7/14

U.S. Cl. 148—6.15 R **7 Claims**

Aluminum surfaces which are covered with a coating or an adhesive layer of a hardenable synthetic resin are pretreated in an aqueous solution containing an alkali pyrophosphate and/or an alkali tripolyphosphate and an alkali nitrite.

3,813,304

PROPELLANTS CONTAINING COPOLYMERS OF DIENES AND POLYMERIZABLE FERROCENE OR CARBORANE COMPOUNDS

Samuel F. Reed, Jr., Holland, Pa., assignor to the United States of America as represented by the Secretary of the Army

No Drawing. Original application June 18, 1971, Ser. No. 155,669. Divided and this application Oct. 25, 1972, Ser. No. 300,039

Int. Cl. C06d 5/06

U.S. Cl. 149—19.2 **3 Claims**

Copolymers of a diene selected from butadiene, isoprene, and chloroprene and a polymerizable monomer selected from ferrocenylmethyl methacrylate, isopropenylferrocene, 1-ferrocenylbutadiene, 2-ferrocenylbutadiene, vinylcarborane, isopropenylcarborane and carboranylmethyl acrylate are disclosed along with preparative procedures therefor. Copolymerizations are carried out in solution (toluene or dioxane) with a suitable polymerization initiator selected from an azo compound to introduce either carboxyl or hydroxyl functionality into the copolymers.

3,813,305

HIGH BURNING RATE NF PROPELLANTS

Mart G. Baldwin and James L. Chaille, Huntsville, Ala., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Oct. 31, 1967, Ser. No. 679,968

Int. Cl. C06b 11/00

U.S. Cl. 149—19.3 **8 Claims**

High burning rate solid propellants having NF-containing binders. The propellant binder is preferably composed of two NF_2-containing materials, the polymer of [2,3-bis(difluoramino)propyl acrylate] and 1,2,3-tris[α,β-bis-(difluoramino)ethoxy] propane plasticizer. The propellant oxidizer is preferably ammonium perchlorate in finely divided form and aluminum powder is the preferred solid propellant fuel.

3,813,306

PROPELLANT COMPOSITION USING CARBOXY-TERMINATED COPOLYMERS OF BUTADIENE AND FERROCENE DERIVATIVES

Samuel F. Reed, Jr., Holland, Pa., assignor to the United States of America as represented by the Secretary of the Army

No Drawing. Original application Dec. 7, 1970, Ser. No. 95,889. Divided and this application May 30, 1972, Ser. No. 257,560

Int. Cl. C06d 5/06

U.S. Cl. 149—19.9 **3 Claims**

Copolymers of butadiene and vinyl ferrocene (VF) are disclosed along with preparative procedures therefor. The copolymers are produced in an organic solvent when polymerization is initiated by a carboxy-containing azo compound, such as, azobis(2-methyl-4-carboxy butyronitrile), thereby forming a coplymer of butadiene and vinyl ferrocene. The copolymers are useful in propellant formulations as a binder where high burning rates are desired.

3,813,307

PROPELLANT COMPOSITION CONTAINING POLYMERS OF VINYL FERROCENE

Jimmy D. Burnett, Arab, Ala., assignor to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Sept. 17, 1969, Ser. No. 858,896

Int. Cl. C06b 11/00

U.S. Cl. 149—19.91 **4 Claims**

Copolymers of vinyl ferrocene and butadiene are disclosed along with the procedure for preparation. The copolymers are useful as a burning rate catalyst and provide a means of introducing and maintaining a high catalyst concentration in solid propellants inasmuch as the copolymer containing the iron catalyst is capable of serving as the binder replacing part of the normally used binders in solid propellants. Also disclosed is a typical solid propellant composition utilizing the copolymers of this invention as a binder replacement and burning rate catalyst.

3,813,308

CASE BONDING SYSTEM FOR CAST COMPOSITE PROPELLANTS

Paul H. Skidmore, Frostburg, Md., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed Mar. 18, 1969, Ser. No. 808,719

Int. Cl. C06b 21/00

U.S. Cl. 149—109 **5 Claims**

A process for bonding a carboxy-containing rubber liner for a cast composite propellant to the rocket motor

insulation is described. Positive bonding without detriment to rocket motor performance is achieved with an organic polyisocyanate surface preparation which chemically unites the insulation to the liner during cure of the liner.

3,813,309
METHOD FOR STRIPPING RESISTS FROM SUBSTRATES

Peter Bakos, Wappingers Falls, and Diana J. Knight, Pine Bush, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

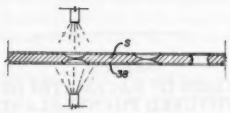
No Drawing. Continuation-in-part of abandoned application Ser. No. 887,725, Dec. 23, 1969. This application Dec. 4, 1972, Ser. No. 311,577
Int. Cl. C23d *17/00*; C23g *1/02*
U.S. Cl. 156—2 **8 Claims**

A method for removing resist materials from substrates without leaving a deleterious residue thereon is provided. The method essentially comprises the use of a resist stripping bath composition which includes a halogenated hydrocarbon solvent, a strong organic acid, an amine and a second organic solvent.

3,813,310
METHOD FOR THE MANUFACTURE OF FLAT COSTUME JEWELRY

Lee John Droege, Michael J. Reardon, and Alan Roy Wilhite, Central City, Colo., assignors to Central City Micro Foundry Ltd., Central City, Colo.

Filed Oct. 2, 1972, Ser. No. 294,360
Int. Cl. C23f *1/02*
U.S. Cl. 156—3 **8 Claims**



This invention concerns costume jewelry manufactured through photofabrication processes from flat production sheets to form items such as earrings and small pendants. The appearance of these items is enhanced by small, transparent or translucent, colored inserts of selected plastic materials. After conventional photofabrication operations form the earrings and pendants in a production sheet, including openings to hold the inserts, further operations include the use of a backing sheet, preferably aluminum foil, adhered against the production sheet and items thereon to hold liquid plastic in the openings until it sets to form the inserts. A further refinement in the production of the items includes the provision of small aluminum reflector tabs at the back of the inserts which materially enhance the brilliance and appearance of the items. The tabs are preferably formed by using an aluminum backing sheet to hold the plastic until it sets, and thereafter, by chemically milling away all of the backing sheet except portions at the inserts.

3,813,311
PROCESS FOR ETCHING SILICON WAFERS

Roger W. Beck, Kokomo, and Douglas J. Yoder, Sharpsville, Ind., assignors to General Motors Corporation, Detroit, Mich.

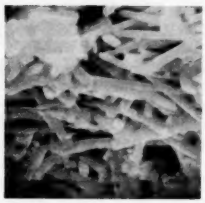
No Drawing. Filed Jan. 24, 1973, Ser. No. 326,231
Int. Cl. H01l *7/50*
U.S. Cl. 156—17 **2 Claims**

A method for etching silicon wafers with improved control of wafer flatness. Wafers are initially etched in a hydrofluoric acid rich etchant containing nitric acid and acetic acid, and then etched a second time in a nitric acid rich etchant containing hydrofluoric acid and acetic acid.

3,813,312
PROCESS FOR MAKING GYPSUM BOARD

William A. Kinkade, 5449 Larkspur Lane 60532, and Clyde B. Roe, 1813 Ogden Ave., 2B 60532, both of Lisle, Ill.

Original application Oct. 5, 1970, Ser. No. 78,067, now abandoned. Divided and this application Jan. 25, 1972, Ser. No. 220,721
Int. Cl. B32b *13/00*; C04b *11/00*
U.S. Cl. 156—39 **20 Claims**

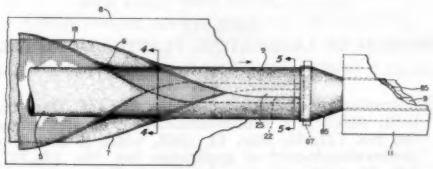


A process of producing gypsum board of enhanced strength and resistance to humidified bond failure at any particular density through the use of a delayed action accelerator. The accelerator is preferably formed by grinding landplaster and a sugar.

3,813,313
METHOD AND APPARATUS FOR MAKING HOSE

Robert H. Feucht and Lawrence R. Jones, Cuyahoga Falls, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Feb. 10, 1972, Ser. No. 225,262
Int. Cl. B29d *23/00*
U.S. Cl. 156—156 **22 Claims**



A method and apparatus for making flexible reinforced hose in long lengths with the hose having a reinforcing section consisting of one or more circumferentially discontinuous or non-endless layers of reinforcing material including at least one longitudinally extending overlapped joint therein. The method includes providing at least one web of reinforcing material, applying one or more layers of flexible polymeric material to the web, folding the web to form an elongated tubular hose member with a longitudinal overlapped joint, moving the tubular member into a curing chamber of an elongated hollow curing apparatus, confining the tubular member exteriorly of the curing chamber prior to curing to prevent opening of the periphery of the member under conditions of inflation, inflating the tubular member prior to curing at least a length of the tubular member, cooling the cured length of the tubular member, deflating the cured length of the tubular member, advancing the cured length of

the tubular member out of the curing apparatus, and repeating the above steps until the entire hose is cured. The apparatus includes an elongated hollow tubular curing apparatus including a curing chamber therein, means for carrying and supporting the hose components, means for moving the tubular member into the curing apparatus, means for confining an uncured length of the tubular member exteriorly of the curing chamber prior to curing, and means for inflating, cooling and deflating the tubular member and means for advancing the cured tubular member out of the curing apparatus. The method and apparatus of this invention are particularly useful for making long length water discharge hose.

3,813,314

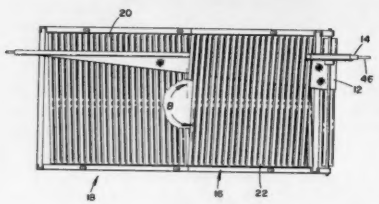
CONTINUOUSLY WRAPPED HOSE AND METHOD OF MAKING THE SAME

Elmer A. Steckel, Wheatridge, William G. Schaffer, Englewood, and Roger A. Payne, Denver, Colo., assignors to The Gates Rubber Company, Denver, Colo.

Filed Jan. 26, 1972, Ser. No. 220,945

Int. Cl. B65h *81/00*

U.S. Cl. 156—162 **4 Claims**



A hose having a continuously wrapped reinforcement applied to a tube at a small helical angle by passing the tube and a strip of reinforcement between two sets of rollers where the axes of the first set are offset at an angle from the axes of the second set of rollers.

3,813,315

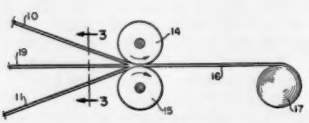
METHOD OF LAMINATING PLASTIC TO METAL

Emery I. Valyi, 5200 Sycamore Ave., Riverdale, N.Y. 10471

Continuation of application Ser. No. 784,568, Dec. 18, 1968, which is a continuation-in-part of application Ser. No. 712,144, Mar. 11, 1968, which in turn is a continuation-in-part of application Ser. No. 654,797, July 20, 1967, all now abandoned. This application Apr. 27, 1971, Ser. No. 137,974

Int. Cl. B32b *31/18*; C09j *5/02*

U.S. Cl. 156—254 **10 Claims**



A method of bonding a plastic layer onto a metal surface in which the metal surface is conditioned for efficient bonding, by first forming thereon a substrate by rolling the metal in contact with a polymer under sufficient pressure to reduce the thickness of the metal. The layer of plastic is bonded to the substrate which forms a link between the plastic layer and the surface of the metal.

ERRATA

For Classes 195—4 and 195—28 see: Patents Nos. 3,813,289 and 3,813,290

3,813,316

MICROORGANISMS HAVING MULTIPLE COMPATIBLE DEGRADATIVE ENERGY-GENERATING PLASMIDS AND PREPARATION THEREOF

Ananda M. Chakrabarty, Latham, N.Y., assignor to General Electric Company

Filed June 7, 1972, Ser. No. 260,488

Int. Cl. C12b *1/00*

U.S. Cl. 195—28 R **18 Claims**

Unique microorganisms have been developed by the application of genetic engineering techniques. These microorganisms contain at least two stable (compatible) energy-generating plasmids, these plasmids specifying separate degradative pathways. The techniques for preparing such multi-plasmid strains from bacteria of the genus Pseudomonas are described. Living cultures of two strains of Pseudomonas (*P. aeruginosa* [NRRL B–5472] and *P. putida* [NRRL B–5473]) have been deposited with the United States Department of Agriculture, Agricultural Research Service, Northern Marketing and Nutrient Research Division, Peoria, Ill. The *P. aeruginosa* NRRL B–5472 was derived from *Pseudomonas aeruginosa* strain 1c by the genetic transfer thereto, and containment therein, of camphor, octane, salicylate and naphthalene degradative pathways in the form of plasmids. The *P. putida* NRRL B–5473 was derived from *Pseudomonas putida* strain PpG1 by genetic transfer thereto, and containment therein, of camphor, salicylate and naphthalene degradative pathways and drug resistance factor RP–1, all in the form of plasmids.

3,813,317

RESOLUTION OF RACEMATES OF RING-SUBSTITUTED PHENYLALANINES

Normand L. Benoiton, Vanier, Ontario, Jeffrey H. Y. Tong and Antoine D'Iorio, Ottawa, Ontario, and Jean C. Petitclerc, Sherbrooke, Quebec, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

Filed Mar. 29, 1972, Ser. No. 239,132

Claims priority, application Canada, Apr. 2, 1971, 109,471

Int. Cl. C12d *1/00*

U.S. Cl. 195—29 **17 Claims**

The enzymatic resolution of racemic mono- and di-ring substituted phenylalanines is provided, via the specific steps of esterification, specific enzymatic hydrolysis of the L-ester, recovery of the liberated L-acid, e.g. by crystallization, and optionally hydrolysis and recycling of the D-isomer. The process gives one economical route for the production of very pure L-DOPA and L-*m*-tyrosine.

3,813,318

PRODUCTION OF XYLOSE (DEXTROSE) ISOMERASE ENZYME PREPARATIONS

Frederick C. Armbruster, La Grange, Robert E. Heady, Park Forest, and Robert P. Cory, La Grange, Ill., assignors to CPC International Inc.

No Drawing. Filed Sept. 17, 1971, Ser. No. 181,639

Int. Cl. C12b *1/00*

U.S. Cl. 195—31 F **8 Claims**

Process for the production of xylose (dextrose) isomerase by means of a mutant strain of Streptomyces that proliferates in a culture medium that may be free of xylose. The xylose (dextrose) isomerase enzyme is therefore constitutive rather than induced.

3,813,319

PROCESS FOR THE MANUFACTURE OF PROTEASES

Renato Craveri, Milan, Pier Luigi Manachini, Cologno Monzese, and Fabrizio Aragozzini, Milan, Italy, assignors to Societá Italiana Resine S.I.R. S.p.A., Milan, Italy

Filed Mar. 15, 1972, Ser. No. 234,742
Claims priority, application Italy, Mar. 23, 1971, 22,113/71
Int. Cl. C12d *13/10*
U.S. Cl. 195—65 6 Claims

A process for the manufacture of proteases of high proteolytic activity, having optimum activity at a pH ranging from 7 to 11 and at a temperature of from 45° to 65° C. and exhibiting a stability of at least 1 hour at 40° C. and at a pH of from 5 to 10, which comprises culturing the micro-organism designated as ATCC No. 20350 belonging to the thermophilic eumycetes group in cultural media comprising at least one source of carbon, at least one source of nitrogen, and at least one mineral salt in the presence of a quantity of air ranging from 0.2 to 1 liter/liter/minute, under agitation, for a time ranging from 30 to 70 hours, at a temperature of 38° to 45° C. and at a pH value of from 6.5 to 8, is disclosed.

3,813,320

METHODS OF MAKING GLUCOSE ISOMERASE AND OF CONVERTING GLUCOSE TO FRUCTOSE

Kenneth K. Shieh and Brendan J. Donnelly, St. Louis County, and Howard A. Lee, Rock Hill, Mo., assignors to Anheuser-Busch, Incorporated, St. Louis, Mo.

No Drawing. Filed Jan. 17, 1972, Ser. No. 218,476
Int. Cl. C07g *7/02*
U.S. Cl. 195—66 R 8 Claims

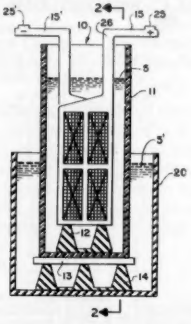
Methods for the conversion of D-glucose to D-fructose are disclosed. Enzymes derived from *Aerobacter levanicum* are used. A glucose isomerizing enzyme is produced when *Aerobacter levanicum* is grown on a substrate containing xylose, preferably unpurified birchwood sulfite liquor.

3,813,321

PROCESS FOR TREATING INDUSTRIAL WASTES

Simon Bastacky, 6604 Dalzell Place, Pittsburgh, Pa. 15217

Filed June 28, 1973, Ser. No. 374,339
Int. Cl. B01k *1/00*; C02c *5/12*
U.S. Cl. 204—149 24 Claims



A process for treating industrial wastes containing sulfuric acid and metal constituents comprising subjecting the wastes to a cell equipped with a plurality of alternately positioned positive and negative lead-antimony alloy electrodes and charging the electrodes. The liquid portion of the waste is dissipated and a residue including the metallic constituents forms. A secondary process is also disclosed comprising the steps of placing additional pickle liquor in a secondary processing tank, contacting the pickle liquor in the secondary processing tank with the exterior wall of the cell, and conducting thermal energy through the cell wall to the pickle liquor in the secondary tank wherein the liquid portion of the liquor in the secondary processing tank is dissipated and a residue including the metallic constituents forms within the secondary tank. The metallic constituents may be reclaimed by a drying step or by an ignition step.

3,813,322

RADIATION CURABLE STYRENATED POLYESTER COATING COMPOSITIONS AND PROCESS OF CURING THEM

Hargovind Nihchaldas Vazirani, Passaic Township, Morris County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.

No Drawing. Filed Dec. 29, 1971, Ser. No. 213,737
Int. Cl. C08g *1/18*
U.S. Cl. 204—159.15 8 Claims

The radiation curable styrenated polyester resins described herein are based upon from 60 to 75 weight percent of a polyester which is the esterification product of maleic anhydride and trimellitic anhydride, one or more short-chain diols such as propylene glycol and a long-chain aliphatic compound such as castor oil. The remainder of the resins include styrene (from 25 to 40 weight percent) up to 50 weight percent of which may be substituted by acrylates such as methyl methacrylate. The resins may additionally contain one or more ultraviolet sensitizers, and one or more inhibitors. Upon curing, the resins are characterized by mechanical toughness and flexibility and are useful for example as cover coats for flexible printed circuit boards and as wire coatings.

3,813,323

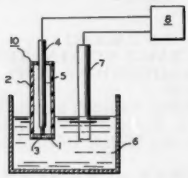
ELECTRODEPOSITION COATING METHOD

Masahiro Ogawa, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan

Filed Feb. 8, 1972, Ser. No. 224,440
Claims priority, application Japan, Apr. 20, 1971, 46/25,399
Int. Cl. B01k *5/02*
U.S. Cl. 204—181 9 Claims

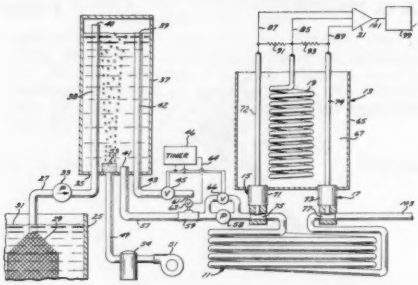
The present invention relates to electrophoretic electrodeposition of polyamide resin powder. More specifically, a method of electrodeposition is provided wherein the dispersion medium is a mixed solution of methylethylketone and trichloroethylene, or such a solution added with carbon tetrachloride. Through electrophoretic electrodeposition, polyamide resin powder dispersed within the medium is uniformly deposited onto the surface of an object to be coated to thereby form a coating of polyamide resin on the object.

3,813,324
DEVICE FOR MEASURING AN ACTIVITY OF COBALTOUS IONS
Kenji Higashiyama and Hiroshi Hirata, Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan
Filed Feb. 28, 1972, Ser. No. 229,912
Claims priority, application Japan, Mar. 2, 1971, 46/11,124, 46/11,125; Mar. 3, 1971, 46/11,408, 46/11,409
Int. Cl. G01n *27/46*
U.S. Cl. 204—195 M 7 Claims



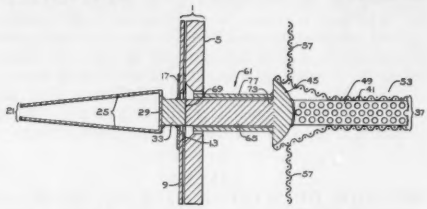
A device for measuring an activity of cobaltous ions comprises a selective electrode and a reference electrode immersed in a solution containing cobaltous ions, said selective electrode including a disc in a batch composition which comprises a combination of cobaltous chalcogenide and at least one member selected from the group consisting of silver telluride and silver selenide or in a batch composition which comprises a combination of silver sulfide and at least one member selected from the group consisting of cobaltous telluride and cobaltous selenide.

3,813,325
CONTINUOUS RESPIROMETER APPARATUS
Kenneth C. Merrell, Brea, Timothy F. Scott, Fullerton, Gordon R. Brushwyler, Yorba Linda, James H. Koegel, Placentia, and William E. Poindexter, Santa Ana, Calif., assignors to Robertshaw Controls Company, Richmond, Va.
Filed July 27, 1972, Ser. No. 275,695
Int. Cl. G01n *27/46*
U.S. Cl. 204—195 B 22 Claims



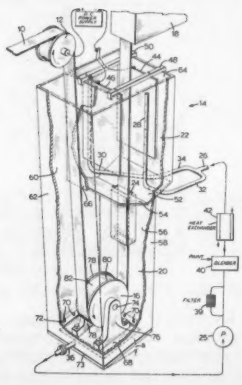
Improved continuous respirometer apparatus including an elongated residence tube having a relatively small cross-section and flow control means for controlling the flow rate of sewage through such tube at a selected rate. Oxygen sensing means is provided with first and second electrolytic sensing probes disposed at the upstream inlet and downstream outlet of such residence tube and cooperate with common electrolyte means to produce first and second electrical signals. Measurement means is connected with the oxygen sensing means for detecting the first and second signals to produce a measurable read-out indicating the difference between such signals whereby the first and second electrolytic sensing probes will cooperate with the common electrolyte to produce an output signal that is essentially unaffected by variations in such common electrolyte.

3,813,326
BIPOLAR ELECTROLYTIC DIAPHRAGM CELL HAVING FRICTION WELDED CONDUCTOR/CONNECTOR MEANS
Leslie Gunby, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed Nov. 24, 1972, Ser. No. 309,310
Int. Cl. B01k *3/00*
U.S. Cl. 204—268 21 Claims



A bipolar electrolytic diaphragm cell is disclosed having a low resistance conductor/connector between the cathodes of one cell and the anodes of the next adjacent cell. The conductor/connector, which penetrates through the backplate, has an anolyte-resistant member connected to the anode and a catholyte-resistant member connected to the cathode. The anolyte- and catholyte-resistant members are connected to an intermediate high conductivity member by friction welding.

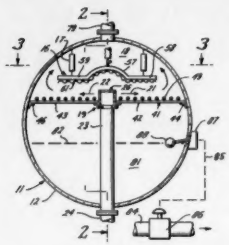
3,813,327
TANK FOR ELECTRO-COATING CONTINUOUS STRIP
Francis R. Crowne, Rexdale, Ontario, Chiong-Heng Tan, Mississauga, Ontario, and Martin A. Vandenbroek, Hamilton, Ontario, Canada, assignors to Abrex Specialty Coatings Ltd., Oakville, Ontario, Canada
Filed June 29, 1972, Ser. No. 267,397
Int. Cl. B01k *5/02*; C23b *13/00*
U.S. Cl. 204—300 3 Claims



A tank for use in electro-coating strip as the strip moves through the tank continuously. The tank includes

inner and outer chambers arranged so that the strip moves upwardly from the outer chamber through a passage and then through the inner chamber where the electro-coating takes place. The passage provides an electrical seal to prevent throw effects reaching the outer tank so that the coating applied to the strip can be controlled substantially within the inner chamber.

3,813,328
ELECTRIC TREATER
Delber W. Turner, Houston, Tex., assignor to Petrolite Corporation, St. Louis, Mo.
Filed Oct. 27, 1972, Ser. No. 301,562
Int. Cl. B03c *5/02*
U.S. Cl. 204—302 **19 Claims**



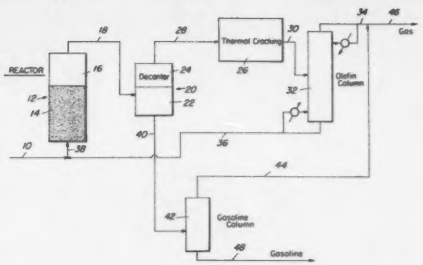
An electric treater for resolving water-in-oil emulsion including a closed horizontally elongated vessel containing an electrical field defined by horizontally-disposed, upper imperforate (energized) and lower foraminous (grounded) electrodes. An inlet distributor directs emulsion flows laterally beneath the imperforate electrode and toward each sidewall of the vessel. Treated oil is removed from above the imperforate electrode and coalesced water from a body of water maintained below the foraminous electrode. The imperforate electrode is formed of transverse rigid ribs having straight and arcuate sections and long pieces of thin metal (corrugated) sheeting integrally secured into a monocoque electrode structure being lightweight but highly resistant to torsional and longitudinal bending forces.

3,813,329
SOLVENT EXTRACTION OF COAL UTILIZING A HETEROPOLY ACID CATALYST
John G. Gatsis, Des Plaines, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Filed Aug. 18, 1972, Ser. No. 281,879
Int. Cl. C10g *1/00*
U.S. Cl. 208—9 **16 Claims**

A process for solvent extracting solid carbonaceous materials in which a heteropoly acid of a Group V–B or Group VI–B metal is employed as a catalyst and the heteropoly acid catalyst or the Group V–B or Group VI–B metal component thereof is recovered in heteropoly acid form from the solid residue resulting from solvent extraction and the heteropoly acid recovered is recycled to the solvent extraction operation.

3,813,330
PROCESS FOR AROMATIZING OLEFINS IN THE PRESENCE OF EASILY CRACKED PARAFFINS
Edwin N. Givens, Pitman, Charles J. Plank, Woodbury, and Edward J. Rosinski, Deptford, N.J., assignors to Mobil Oil Corporation
Filed Mar. 5, 1973, Ser. No. 337,971
Int. Cl. C10g *37/10*
U.S. Cl. 208—66 **7 Claims**

Process for aromatizing a feedstock, which may be liquid or gaseous and is hydrocarbon in nature having a boiling range of about C_2 to 400° F. by contacting the feedstock with a ZSM–5 type of catalyst under aromatization conditions whereby making a mixed gas and liquid product, separating the gas and liquid fractions of the



product, subjecting the gas fraction to dehydrogenative cracking to increase the proportion of olefins and light gases therein, separating and recycling the olefin rich portion to admixture with the original feedstock, and recovering liquid gasoline of very high octane.

3,813,331
DEMETALATION OF HYDROCARBON CHARGE STOCKS WITH MANGANESE NODULE CATALYST
Paul B. Weisz, Yardley, and Anthony J. Silvestri, Morrisville, Pa., assignors to Mobil Oil Corporation
No Drawing. Continuation-in-part of application Ser. No. 100,931, Dec. 23, 1970, now Patent No. 3,716,479. This application Oct. 25, 1972, Ser. No. 300,550
The portion of the term of the patent subsequent to Feb. 13, 1990, has been disclaimed
Int. Cl. C10g *23/02*
U.S. Cl. 208—251 H **9 Claims**

This specification discloses a process for the demetalation of hydrocarbon charge stocks containing metal impurities. The process comprises contacting said hydrocarbon charge stock with hydrogen and with a catalyst comprising salt water manganese nodules. These nodules have been previously washed with water having a temperature of at least 125° F. and a total salts content of not more than 1000 parts per million for a time sufficient to increase the accessible surface area of the nodules.

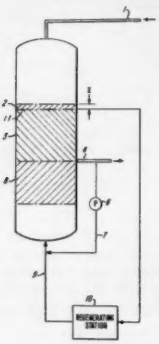
3,813,332
COLOR STABILIZATION OF PETROLEUM DISTILLATES
Marion J. Gattuso, Hoffman Estates, and Robert J. Arnold, Chicago, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Filed Nov. 24, 1972, Ser. No. 309,381
Int. Cl. C10g *17/00*
U.S. Cl. 208—290 **2 Claims**

A process for the removal or stabilization of color generating impurities in a petroleum distillate charge stock by utilizing a solid resin which possesses acidic properties.

3,813,333
METHOD OF TREATING FLUID IN A CONTINUOUS MANNER
Georg Plura, Bergneustadt, Germany, assignor to L. & C. Steinmuller G.m.b.H., Postfach, Gummersbach, Germany
Filed Apr. 19, 1972, Ser. No. 245,481
Claims priority, application Germany, Apr. 20, 1971, P 21 18 949.1
Int. Cl. B01d *15/02*
U.S. Cl. 210—33 **2 Claims**

A method of continuously treating fluids, according to which the fluid to be treated, after entering the ion ex-

change bed, is subdivided into at least two branch streams, at least one of which serves to carry off used up ion exchange particles, while the other is treated in the ion exchange bed and, after reaching the maximum approximation of the desired properties, enters into a bed section comprised exclusively of regenerated ion exchange particles. From here the branch stream is withdrawn, and the



discharged finished fluid stream is subsequently divided into at least two branch streams, at least one of which conveys the regenerated ion exchange particles to the bed, and the bed in its entirety, in view of the pressure differential in the non-treating bed section and in the treating bed section, is moved against the direction of flow of the fluid to be treated.

3,813,334

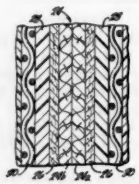
POROUS BACKING MATERIAL FOR SEMI-PERMEABLE MEMBRANE CARTRIDGES

Donald T. Bray, Escondido, Calif., assignor to Desalination Systems, Inc., Escondido, Calif.

Filed Apr. 9, 1973, Ser. No. 349,072

Int. Cl. B01d *13/00*

U.S. Cl. 210—321 8 Claims



A backing material comprising two layers of ribbed fabric arranged in rib face to rib face relationship with the ribs substantially parallel in the direction of spiral winding, the width of the grooves in each layer of ribbed fabric being less than the width of the ribs in the opposite fabric layer, is employed for transfer of product liquid to a central collecting tube in a spiral wound cartridge for use in reverse osmosis or ultrafiltration apparatus. This provides excellent fluid transfer through the longitudinal grooves in the ribbed fabric layers; the greater width of the ribs prevents these from intruding into the grooves of the opposite fabric layer and restricting flow. Preferably the ribbed fabric is of tricot woven from a synthetic fiber and impregnated with a reinforcing resin, with grooves and ribs in each fabric layer being of substantially the same dimensions as the respective grooves and ribs in the other fabric layer.

3,813,335

LUBRICANT COMPOSITION FOR THE HOT PRESSING OF METALS AND A METHOD FOR THE PREPARATION THEREOF

Oleg Pavlovich Drobich, ulitsa Klary Tsetkin 36/2; Alexei Evgenievich Pritomanov, prospekt Gagarina 133, kv. 28; and Viktor Petrovich Rokutov, ulitsa Fuchika 14, kv. 32, all of Dnepropetrovsk, U.S.S.R.; Nikolai Spiridonovich Kirvalidze, ulitsa Ryleeva 22, Nikopol, U.S.S.R.; and Dusheli Vladimirovich Gerzmava, ulitsa Kirova 9, kv. 30; and Boris Valentinovich Mandzjuk, ulitsa Glinki 18, kv. 72, both of Dnepropetrovsk, U.S.S.R.

No Drawing. Filed July 7, 1972, Ser. No. 269,581

Int. Cl. C10m *5/02, 5/04, 5/08*

U.S. Cl. 252—14 5 Claims

A lubricant composition for use in the hot pressing of metals which comprises the following components taken in weight percent:

Vermiculite	60–38
Graphite	0–16
Mineral oil	33–23
Wood saw-dust	3–11
Sodium chloride	4–12

A method for the preparation of said lubricant composition, characterized in that vermiculite free of mechanical impurities is heated up to a temperature of about 900–1100° C. which is subsequently ground and mixed with graphite, wood saw-dust, sodium chloride and a mineral oil in the temperature range from about 60° C. to about 80° C. to obtain a final product.

This lubricant composition is suitable for the pressing of metal tubes and profiles.

3,813,336

REACTION PRODUCTS OF AMINES AND DITHIOPHOSPHORIC ACIDS OR SALTS

Alfred Goldschmidt, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Sept. 11, 1970, Ser. No. 73,171

Int. Cl. C10m *1/48*

U.S. Cl. 252—32.7 E 17 Claims

Novel compositions useful as lubricating oil additives are produced by reacting an amine and a dithiophosphoric acid or salt at a temperature of 140°–200° C.

3,813,337

METAL WORKING LUBRICANT COMPOSITION

David B. Sheldahl, Griffith, Ind., assignor to Atlantic Richfield Company, New York, N.Y.

No Drawing. Filed Mar. 18, 1971, Ser. No. 125,795

Int. Cl. C10m *1/40*

U.S. Cl. 252—33.4 16 Claims

Soluble oil compositions and aqueous emulsions thereof having improved extreme pressure properties and being useful in metal working operations are disclosed. The soluble oil compositions comprise lubricating oil, non-cationic emulsifier, overbased alkali metal or alkaline earth metal sulfonate, chlorinated hydrocarbonaceous component, a ccupling agent and a stabilizing amount of water. The aqueous emulsions are formed by combining a major amount of water with a minor amount of the composition described above.

3,813,338
TEXTILE-MACHINERY LUBRICANT COMPOSITION

Walter J. Coppock, Wallingford, and James R. Amaroso, Newtown Square, Pa., and John Q. Griffith III, Claymont, Del., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

No Drawing. Continuation-in-part of applications Ser. No. 35,231, May 6, 1970, Ser. No. 60,642, Aug. 3, 1970, now abandoned, Ser. No. 178,193, Sept. 7, 1971, and Ser. No. 178,479, Sept. 7, 1971. This application Apr. 4, 1972, Ser. No. 240,806

Int. Cl. C10m *1/54, 3/48*

U.S. Cl. 252—42.1 **13 Claims**

An improved high retention lubricant for textile-machinery comprises a naphthenic base oil, a tackiness agent (e.g., polyisobutylene), and an effective amount of a lithium soap (e.g. 0.1–1.5% lithium stearate) to provide a MacMichael viscosity at 70° F. of at least 15 (preferably 20–35). The base oil can have a viscosity in the range of 60–600 SUS at 100° F. (more preferably 125–300 SUS) and an aniline point in the range of 150–170° F., said base oil comprising at least one hydrorefined naphthenic oil component having a viscosity in the range of 40–12,000 SUS at 100° F., and preferably, is a wide boiling range blend containing at least two such hydrorefined naphthenic oils. For example, the lubricant can comprise 75 parts by weight of 100 SUS hydrorefined naphthenic oil, 20 parts of 2400 SUS hydrorefined napththenic oil, 2 parts of a high molecular weight (apparent M.W. in oil of about 100,000) polyisobutylene tackiness agent, 1 part of lithium stearate, 1.5 parts of chlorinated paraffin as an antiwear agent, and 5 p.p.m. of silicone antifoam.

3,813,339
ACID-TERMINATED HYDROXY ESTER COMPOUNDS AS LUBRICATING OIL ADDITIVES

Raymond H. Boehringer, Cincinnati, Ohio, Ronald M. Wilson, Edgewood, Ky., and Mark A. Margeson, Cincinnati, Ohio, assignors to Emery Industries, Inc., Cincinnati, Ohio

No Drawing. Filed Aug. 2, 1972, Ser. No. 277,272

Int. Cl. C10m *1/26, 1/28*

U.S. Cl. 252—56 S **4 Claims**

Noncorrosive and low-sludging EP additives for lubricating oils to improve the load-carrying ability of synthetic ester lubricants are provided. The additive compositions of this invention are acid-terminated hydroxy ester compounds obtained by the partial esterification of a polybasic acid with a glycidyl ester. The extreme pressure properties of synthetic ester lubricating oil compositions are significantly increased by incorporating a small amount of compounds such as half-esters derived from the reaction of dimer acid and a glycidyl ester of a branched-chain acid.

3,813,340
METHOD OF PRODUCING CRYSTALLINE SILICON CARBIDE WHISKERS

Wilhelmus Franciscus Knippenberg and Gerrit Verspui, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of application Ser. No. 712,550, Mar. 26, 1968, which is a continuation-in-part of application Ser. No. 667,700, Sept. 14, 1967, both now abandoned. This application Feb. 10, 1971, Ser. No. 114,374

Claims priority, application Netherlands, Sept. 15, 1966, 6613012; Nov. 22, 1966, 6616397; Mar. 1, 1967, 6703399, 6703400

Int. Cl. C01b *31/36;* **C04b** *35/56*

U.S. Cl. 252—62.3 C **5 Claims**

Method for controlling the growth of silicon carbide crystals by carrying out the growth in the presence of an element of Group III–B of the Periodic System of the elements, especially, lanthanum. The wurtzite modifications can be produced, which will be useful in semiconductor devices. In addition, very long thin whiskers can be produced useful for reinforcing other materials.

3,813,341
DERIVATIVES OF GLYCOLS, GLYCOL ETHERS AND GLYCOL ESTERS

John Scotchford Elliott, Gerald John Joseph Jayne, Monty Frederick Crook, and Colin John Harrington, London, England, assignors to Buemah Oil Trading Limited, London, England

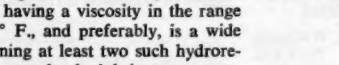
No Drawing. Original application Mar. 9, 1971, Ser. No. 122,558, now abandoned. Divided and this application Aug. 14, 1972, Ser. No. 280,101

Claims priority, application Great Britain, Mar. 9, 1970, 11,273/70

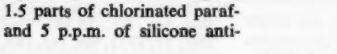
Int. Cl. C09k *3/00*

U.S. Cl. 252—77 **9 Claims**

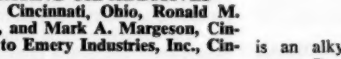
Novel glycol urethanes have the general formula:



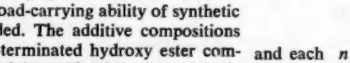
wherein R_1 is an alkyl group containing from 1 to 4 carbon atoms, an allyl group or the group



R_2 is an alkylene radical containing from 1 to 4 carbon atoms; R_3 is hydrogen, an alkyl radical containing from 1 to 4 carbon atoms, or one of the groups



is an alkyl radical containing from 1 to 4 carbon atoms; R_6 is an alkylene group containing from 1 to 10 carbon atoms; R_7 is an alkyl group containing from 1 to 4 carbon atoms or the group



and each *n* is the same or different and is an integer of from 1 to 6 and when any *n* is an integer greater than 1, each R_2 may be the same or different.

A method of preparing the novel compounds and hydraulic fluids consisting of, or comprising the novel compounds are also described.

3,813,342
CLEANING COMPOSITIONS

Isadore Nathan Cooperman, 62 Farms Road, Freehold Township, Monmouth County, N.J. 07728

No Drawing. Continuation-in-part of abandoned application Ser. No. 43,170, June 30, 1970, which is a continuation-in-part of application Ser. No. 770,087, Oct. 23, 1968, now Patent No. 3,532,599. This application June 20, 1972, Ser. No. 264,425

Int. Cl. C11d *7/42*

U.S. Cl. 252—170 **12 Claims**

A composition suitable for cleaning printing equipment having accumulated gum deposits comprising at least one enzyme selected from the group consisting of diastase, an esterase, a pentosanase-hexosanase, a protease or a cellulase and an organic solvent capable of dissolving printing ink, said composition containing at least about 0.1 percent by weight of the enzyme.

3,813,343

DIMETHYL SULFOXIDE CONTAINING CLEANER COMPOSITIONS

Cromwell D. Mukai, Berkeley Heights, and Bernard Weinstein, North Plainfield, N.J., assignors to American Home Products Corp., New York, N.Y.

No Drawing. Filed Jan. 10, 1972, Ser. No. 216,827

Int. Cl. C11d *9/14, 3/34, 3/44*

U.S. Cl. 252—111 4 Claims

Cleaning compositions are described comprising (a) a non-caustic inorganic cleaner, (b) an amine and/or ammonia, (c) an organic solvent insoluble or partially soluble in water, and (d) dimethyl sulfoxide. These compositions are useful in removing deposits such as grease, oil, food, etc. from surfaces such as oven walls.

3,813,344

NUCLEAR FUEL TABLET CONTAINING URANIUM CARBIDE, PLUTONIUM CARBIDE AND PLUTONIUM NITRIDE, SULFIDE OR PHOSPHIDE

Axel Krauth, Wurzburg, and Norbert Muller, Wolfgang, near Hanau, Germany, assignors to NUKEM, G.m.b.H., Wolfgang, near Hanau, Germany

Filed Sept. 29, 1971, Ser. No. 184,818

Int. Cl. C09k *3/00;* G21c *19/42*

U.S. Cl. 252—301.1 R 5 Claims

Nuclear fuels are prepared from uranium-plutonium-carbide or uranium-plutonium-nitride in which the fertile material (e.g. uranium carbide) and the fuel (plutonium carbide) are present arranged separately and the fuel (e.g. plutonium carbide) region has a higher and more open porosity than the fertile material (e.g. uranium carbide).

3,813,345

METHOD OF PRODUCING MICROCOLLOIDAL AQUEOUS EMULSIONS OF UNSATURATED ORGANIC COMPOUNDS

John T. Urton, Prairie Village, Kans., assignor to Vanguard Chemical Company, Inc., Kansas City, Mo.

Filed Aug. 5, 1971, Ser. No. 169,248

Int. Cl. B01j *13/00*

U.S. Cl. 252—312 18 Claims

A method of reducing the micelle size of an aqueous emulsion of an unsaturated organic compound utilizes an ionic pumping action to achieve micelle division. The resin utilized is selected on the basis of the presence in the molecular chain of a high number of sites which can accept a positive ion to cause the molecule to assume an overall charge. A gross emulsion is first formed utilizing a sufficient quantity of surfactant so that an excess is present to assure surfacing of the newly formed micelles upon division of the micelles of the initial emulsion. The resin is equilibrated utilizing a compound capable of donating positive ions to the resin molecule to cause the molecule to assume a charge of the same sign as the sign of the charge on the emulsion micelles. The resulting increased charge in the emulsion results in division of the micelles into micelles of a smaller size. The resin pumping action can be continued until the micelles of the emulsion are characterized by an inability to reflect light of a visible wavelength.

The invention also provides for a method of killing insects wherein a microemulsion of an unsaturated organic compound having insecticidal properties is prepared in the manner set forth above. An additional step is the inclusion of a chelating agent for the calcium ions which are present in the basil membrane of an insect. This allows the emulsion micelles of the insecticide to penetrate through the insect.

3,813,346

METHOD FOR EXPANDING MICA-GROUP MINERALS WITH HYDROGEN PEROXIDE PLUS AN ACID

Takeo Wada and Saburo Komai, Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing. Filed Aug. 3, 1972, Ser. No. 277,509

Claims priority, application Japan, Aug. 12, 1971, 46/61,244

Int. Cl. C04b *31/22, 31/36, 2/02*

U.S. Cl. 252—378 R 10 Claims

The present invention relates to a method for expanding a mica mineral which comprises treating a mica mineral in the presence of hydrogen peroxide and an acid. A high degree of expansion is realized.

3,813,347

MANUFACTURE OF ADSORBENT COMPOSITE

Charles M. Hayes, Hoffman Estates, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of abandoned application Ser. No. 78,291, Oct. 5, 1970. This application Dec. 17, 1971, Ser. No. 209,406

Int. Cl. B01j

U.S. Cl. 252—428 9 Claims

The method of preparing an adsorbent composite which comprises precoating an adsorbent with an inert removable shielding liquid, thereafter uniformly distributing the precoated adsorbent in a matrix and subsequently removing said shielding liquid from the composite. A specific embodiment comprises precoating carbon granules with Decalin, separately preparing a polyurethane formulation, adding the precoated carbon granules thereto, foaming the polyurethane formulation, and subsequently heating the composite in vacuum to remove the Decalin. In one embodiment, the final composite is especially useful to adsorb gasoline vapors from the carburetor and/or fuel system of an automobile and for the controlled desorption of the gasoline upon restarting the engine.

3,813,348

TRANSVINYLATION CATALYST

John J. Godfrey, Murrysville, Pa., assignor to W. R. Grace & Co., New York, N.Y.

No Drawing. Application Aug. 9, 1971, Ser. No. 170,295, now Patent No. 3,786,102, which is a continuation-in-part of abandoned application Ser. No. 883,241, Dec. 9, 1969. Divided and this application Nov. 22, 1972, Ser. No. 308,889

Int. Cl. C07c *41/00, 41/10*

U.S. Cl. 252—431 N 3 Claims

A transvinylation catalyst consisting essentially of a mercury(II) salt of a strongly acidic sulfonated hydrocarbon ion exchange resin and an effective amount of a sterically hindered tertiary amine selected from the group consisting of 2,6-lutidine, 2,6-diethylpyridine, 2-methyl-6-ethylpyridine, 2-methyl-6-n-propylpyridine, and 2-methyl-6-isopropylpyridine. A process for preparing a first vinyl ether comprising contacting a second vinyl ether and an alcohol or phenol with said catalyst.

ERRATUM

For Class 252—520 see:
Patent No. 3,813,252

3,813,349
LIQUID DETERGENT COMPOSITION

Alan B. Wolfson, Springfield Township, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Continuation of abandoned application Ser. No. 888,862, Dec. 29, 1969. This application May 30, 1972, Ser. No. 257,746

Int. Cl. C11d *3/066, 3/07*

U.S. Cl. 252—526 **2 Claims**

Disclosed herein are stable two-phase liquid detergent emulsions that maintain stability without the use of additional stabilizing agents. These autostabilized emulsions are made up of anionic, zwitterionic or simipolar compounds, electrolytes, alcohols and water. Autostabilized emulsions are capable of supporting water-insoluble particulate material.

3,813,350
MILDNESS ADDITIVE

Ralph Kelly, Cincinnati, and Edmond Jean Ritter, Loveland, Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

No Drawing. Application Jan. 9, 1968, Ser. No. 696,509, now Patent No. 3,630,934, which is a continuation-in-part of application Ser. No. 613,095, Feb. 1, 1967, now Patent No. 3,538,009. Divided and this application May 5, 1971, Ser. No. 140,555

Int. Cl. C11d *3/16, 3/48*

U.S. Cl. 252—547 **21 Claims**

The degree of skin irritation of detergent compositions is reduced by adding to the detergent composition a mildness additive having the general formula Y—R—Y′ wherein R is a divalent organic radical containing a chain of at least 15 atoms the majority of which are carbon atoms, and containing a cyclic moiety of at least 5 atoms, and wherein Y and Y′ are polar groups containing at least one nitrogen, oxygen, phosphrous, sulfur or combination thereof. Suitable mildness additives include esters of polymerized unsaturated C_{12}–C_{26} fatty acids and glycols or polyoxyalkylene glycols.

3,813,351
PRIMING COMPOSITION

J. Brent Thomson, Lewiston, Idaho, assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 167,799, July 30, 1971, now Patent No. 3,706,592, which is a division of application Ser. No. 862,531, Sept. 30, 1969, now Patent No. 3,697,551, which in turn is a continuation-in-part of abandoned application Ser. No. 789,974, Dec. 31, 1968. This application June 6, 1972, Ser. No. 260,079

Int. Cl. C08c *11/22, 11/24;* **C08g** *30/00*

U.S. Cl. 260—2 EP **3 Claims**

Disclosed are priming compositions comprising (1) a nitrogen containing silane compound of the formula

$$(X)_a\text{—}Si\text{—}[R\text{—}(Z)_c]_d \quad \text{with } (T)_b \text{ on } Si$$

where R is an organic radical, X is selected from halo, hydroxy, alkoxy, aryloxy, organo oxycarbonyl, azido, amine, and amide radicals; T is selected from alkyl, cycloalkyl, aryl, alkaryl, and aralkyl radicals; *a* is an integer from 1 to 3; *b* is an integer from 0 to 2; *c* is an integer from 1 to 10; *d* is an integer from 1 to 3; and $a+b+d$ equals 4; and Z is selected from

$$-O\text{—}\overset{O}{\overset{\|}{C}}\text{—}\overset{R'}{\underset{|}{C}}N_3, \quad -O\overset{O}{\overset{\|}{C}}N_3, \text{ and } -SO_2N_3$$

where R′ is selected from hydrogen, alkyl, cycloalkyl, aryl and —COOR″ radicals; where R″ is selected from alkyl, cycloalkyl, and aryl radicals, (2) a polymer, and (3) a liquid medium. Also disclosed is a process to promote the adhesion of polymers to siliceous materials, metals, metal oxides, and other polymers using the said priming composition.

3,813,352
EPOXIDE RESIN MIXTURES

Jurgen Habermeier, Pfeffingen, Daniel Porret, Binningen, and Dieter Baumann, Birsfelden, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Dec. 26, 1972, Ser. No. 318,154

Claims priority, application Switzerland, Dec. 30, 1971, 19,179/71

Int. Cl. C08g *30/02*

U.S. Cl. 260—2 EP **10 Claims**

New epoxide resin mixtures which contain a major proportion of higher molecular weight N,N′-diglycidyl compounds of oxalkylated cyclic ureide derivatives are obtained by reacting 1 mole of an oxylated cyclic ureide, such as 3 - (2′ - hydroxy - n - propyl)-5,5-dimethyl hydantoin, with 1.2 to 3.0 moles of epihalogenohydrin in known manner.

The new epoxide resin mixtures are suitable for the manufacture of moulded articles and coatings with good mechanical properties and, in comparison with the low molecular N,N′-diglycidyl compounds of oxalkylated cyclic ureides, possess the advantage that a slighter exothermicity occurs on gelling and a slighter shrinkage during curing.

3,813,353
PREPARATION OF ION EXCHANGE RESINS FROM ACROLEIN COPOLYMERS

David H. Clemens, Willow Grove, Pa., and Raymond J. Lange, Wheelersburg, Ohio, assignors to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Filed Feb. 5, 1973, Ser. No. 329,932

Int. Cl. C08f *27/08*

U.S. Cl. 260—2.1 C **14 Claims**

Weak base anion exchange resins are prepared by the Wallach reaction on poly(acrolein:divinylbenzene). The crosslinked polyacrolein is subjected to reaction with a secondary amine and formic acid to convert the aldehyde groups to the tertiary amine form. The resulting weak base anion exchange resins have good anion exchange capacities, good physical stability, good rinse requirements and resistance to oxidation. Strong base anion exchange resins are prepared by reaction of the tertiary amine product with a suitable alkyl halide or equilvalent material. These resins show excellent thermal stability and resistance to organic fouling.

3,813,354
COPOLYMERS OF ALKENYLSULFONATES AND CATION PERMOSELECTIVE MEMBRANES BASED THEREON

Antonio Chiolle, Ferrara, Lino Credali, Casalecchio, Paolo Longi and Francesco Greco, Milan, and Romano D'Angelo, Brugherio, Italy, assignors to Montecatini Edison S.p.A., Milan and Rome, Italy

No Drawing. Filed July 5, 1972, Ser. No. 269,061

Claims priority, application Italy, July 8, 1971, 26,727/71

Int. Cl. C08f *15/02, 15/40*

U.S. Cl. 260—2.2 R **17 Claims**

Alkenylsulfonate copolymers, which, on heating, undergo self-cross-linking, and when so cross-linked, can be formed into cation permoselective membranes, said copolymers comprising, in chemically combined form: an alkenylsulfonate, vinylidene chloride and/or α-chloroacrylonitrile, and optionally, at least one other copolymerizable monomer containing a $CH_2{=}C<$ group.

3,813,355

ANTIMONY TALLATE CATALYSIS OF FOAMS PREPARED FROM CARBOXY-CONTAINING ADDUCT POLYOLS

John K. Allen, Batavia, Ill., assignor to Standard Oil Company, Chicago, Ill.

No Drawing. Filed Aug. 21, 1972, Ser. No. 282,465

Int. Cl. C08g *22/40, 22/44*

U.S. Cl. 260—2.5 AB 2 Claims

The catalysis of rigid urethane-type foams prepared from polyarylpolyisocyanates and free carboxy-containing adduct polyols is improved by the use of antimony tallate as the catalyst. Antimony tallate is also extremely effective in foams containing aromatic carboxylic acid derivatives as a third principal component. These foams are useful for applications requiring good fire resistant properties.

3,813,356

FIRE-RETARDANT MATERIAL OR CONGLOMERATE CONTAINING FILLER CONSISTING ESSENTIALLY OF MAGNESIUM SILICATE

Henri Lievremont, 103 Rue Lamarck, and Adolphe Cominassi, 95 Avenue Mozart, both of 75 Paris, France

No Drawing. Filed Aug. 22, 1972, Ser. No. 282,757

Claims priority, application France, July 18, 1972, 25,814

Int. Cl. C08f *47/10, 51/18*

U.S. Cl. 260—2.5 F 19 Claims

This invention concerns a new industrial product consisting of a fire-retardant material or conglomerate, characterized by the fact that it contains 25 to 80% of a binder consisting of a phenol-formol resin, and 30 to 120% fillers, preferably inorganic fillers, in relation to the weight of resin, including 10 to 42% magnesium silicate powder.

This material meets building safety standards, notably for high-rise buildings.

3,813,357

HYDROCARBON-DERIVED RESINS HAVING LOW SOFTENING POINT

David R. St. Cyr, Uniontown, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Continuation-in-part of application Ser. No. 52,133, July 2, 1970, now Patent No. 3,692,756. This application June 8, 1972, Ser. No. 260,881

Int. Cl. C08f *15/40*

U.S. Cl. 260—5 3 Claims

A composition comprising a hydrocarbon-derived resin as a tackifier and a polymer selected from natural rubber, synthetic rubber and a thermo plastic polymer. The hydrocarbon-derived resin is characterized by having a softening point in the range of about 25° C. to about 80° C., a volatility of less than about 6 weight percent and a number average molecular weight in the range of about 1000 to about 1400 and which comprises from about 5 to about 60 percent units derived from piperylene, from about 1 to about 30 percent units derived from 1,3-butadiene, from about 5 to about 60 percent units derived from isobutylene, from about 5 to about 30 percent units derived from 2-methyl-1-butene, from about 5 to about 40 percent units derived from 2-methyl-2-butene, from about 0 to about 10 percent units derived from isoprene and from about 0 to about 10 percent units derived from other hydrocarbons containing 4 to 6 carbon atoms, wherein the ratio of units derived from piperylene to units derived from 1,3-butadiene is from about 10:1 to about 1:2 and the ratio of units derived from piperylene to units derived from isobutylene is from about 6:1 to about 1:6.

3,813,358

POLYCARBONATE MOLDING COMPOSITION COMPRISING AN AROMATIC POLYCARBONATE GRAFT COPOLYMER AND A MODIFIER

William J. O'Connell, Evansville, Ind., assignor to General Electric Company

No Drawing. Filed Jan. 3, 1972, Ser. No. 215,111

Int. Cl. C08b *21/08;* C08g *41/04, 39/10*

U.S. Cl. 260—16 4 Claims

An improved polycarbonate molding composition having in admixture therewith minor amounts of a graft copolymer of a polybutadiene and a mixture of an alkenyl cyanide and a vinyl aromatic hydrocarbon.

3,813,359

STARCH-FLUORO POLYMER TEXTILE SIZING, WATER AND OIL REPELLENT COMPOSITION

Robert Tweedy Hunter, Jr., Mendham, and Herman Lowell Marder, Plainfield, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 740,437, June 19, 1968. This application Feb. 4, 1972, Ser. No. 223,735

Int. Cl. C08d *9/06*

U.S. Cl. 260—17.4 ST 6 Claims

A textile sizing, i.e., starching, composition which also imparts a measure of water and/or oil-repellency containing a water-soluble starch and a fluoropolymer emulsion dispersed, preferably, under the aegis of normally gaseous propellant.

3,813,360

7H-THIAZOLO[3,2-a]PYRIMIDIN-7-ONES

Delme Evans, Chalfont St. Peter, England, assignor to Lilly Industries, Limited, London, England

No Drawing. Filed Sept. 20, 1971, Ser. No. 182,122

Claims priority, application Great Britain, Sept. 30, 1970, 46,404/70

Int. Cl. C07d *51/46*

U.S. Cl. 260—25 A 1 Claim

7H - thiazolo[3,2-a]pyrimidin - 7 - ones, for example 3-methyl - 5 - phenyl - 7H - thiazol[3,2-a]pyrimidin-7-one β-aminoacryloyliminothiazoline derivatives thereof and their benzothiazole and benzothiazoline analogues possess anti-fungal, amoebicidal and anti-inflammatory activity, and may be prepared by reaction of a 2-aminothiazole or 2-aminobenzothiazole with a propiolic acid or ester thereof followed optionally by reaction with an amine, or with propiolyl chloride followed by reaction with an amine.

3,813,361

NON-DISCOLORING THERMOSETTING POLYURETHANE LACQUER

Marina N. Gillis, Morrisville, Pa., and Michael P. Mazzeo, Hightstown, N.J., assignors to Thiokol Chemical Corporation, Bristol, Pa.

No Drawing. Filed Oct. 16, 1972, Ser. No. 298,173

Int. Cl. C08g *51/24, 51/44, 51/34*

U.S. Cl. 260—29.2 TN 14 Claims

A thermosetting polyurethane lacquer composition is disclosed comprising (a) a polyurethane, which is the reaction product of at least one polyol and a diisocyanate, and which has been chain extended, (b) a cross-linking amount of dimethylolurea or dimethylolethyleneurea, (c) suitable solvents, and (d) .003–.03 parts of phosphoric acid per 100 parts of polyurethane solvents.

3,813,362

WATER - SOLUBLE POLYAMIDEPOLYAMINES CONTAINING PHENYLENE LINKAGES AND PROCESSES FOR THE MANUFACTURE THEREOF

Anthony Thomas Coscia, South Norwalk, and Laurence Lyman Williams, Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Original application Oct. 12, 1970, Ser. No. 80,181, now Patent No. 3,733,290. Divided and this application Oct. 27, 1972, Ser. No. 301,556

Int. Cl. C08g *20/20, 51/24*

U.S. Cl. 260—29.2 N **7 Claims**

Water-soluble cationic polyamide-polyamine resins containing phenylene linkages are prepared by reacting ⅓ to ¾ mol of a non-orthophthalic acid with 1 mol of a water-soluble polyalkylenepolyamine, reacting the resulting monomeric phthalamide with ⅔ to ¼ mol of a C_3–C_{10} saturated aliphatic dicarboxylic acid to form a chain polymer (the total amount of the acids being ¾ to 5/4 mol per mol of the polyamine) the polymer can be rendered thermosetting by reaction with epichlorohydrin.

3,813,363

AQUEOUS COATING COMPOSITIONS OF CYCLIC SULFONIUM ZWITTERIONS AND COLLOIDAL SOLS

Donald L. Schmidt, Hugh B. Smith, and Wilhelm E. Walles, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

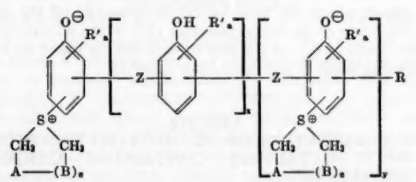
Filed Aug. 16, 1971, Ser. No. 172,332

The portion of the term of the patent subsequent to Jan. 18, 1989, has been disclaimed

Int. Cl. C08g *5/02, 33/10;* **C10m** *7/08, 7/28;* **F16c** *33/20*

U.S. Cl. 260—29.3 **19 Claims**

Aqueous coating compositions are prepared from water-soluble cyclic sulfonium zwitterions of Formula I:



where Z is a bridging ether, ester or alkylene group and $\Sigma(x+y)=0-20$ and aqueous inorganic and organic colloidal sols stable at alkaline pH. These compositions cure thermally to form water-insoluble coatings with the colloidal particles dispersed throughout a binder matrix of polymerized zwitterionic monomer. Coatings of unusual hardness, scratch resistance, flexibility, resilience and lubricity can be obtained using sols of such materials as silica, polytetrafluoroethylene, polyethylene, styrene-butadiene latex, and water-insoluble oils.

3,813,364

SELF-BONDING, HEAT-CURABLE SILICONE RUBBER

George P. De Zuba, Mechanicville, and Abe Berger, and Terry G. Selin, Schenectady, N.Y., assignors to General Electric Company

No Drawing. Continuation of application Ser. No. 241,831, Apr. 6, 1972, now abandoned, which is a continuation-in-part of Ser. No. 132,552, Apr. 8, 1971, now abandoned. This application Apr. 18, 1973, Ser. No. 352,125

Int. Cl. C08g *51/04*

U.S. Cl. 260—37 SB **33 Claims**

A self-bonding, heat-vulcanizable silicone rubber composition comprising (a) an organopolysiloxane polymer of the formula

$$R_aSiO_{\frac{4-a}{2}},$$

(b) a curing catalyst, and (c) an additive selected from cyanurates, isocyanurates, silyl-cyanurates and silyl-isocyanurates, where R is selected from monovalent hydrocarbon radicals and halogenated monovalent hydrocarbon radicals, *a* varies from 1.95 to 2.01. There may also be present in the above composition a process aid and a filler, as well as other ingredients.

3,813,365

HIGH MOLECULAR WEIGHT CYCLIC NITRILE ADDUCT COMPOSITIONS

Kurt C. Frisch, Grosse Ile, and Sidney Reegen, Oak Park, Mich., and Jerry A. Dieter, Cherry Hill, N.J., assignors to Atlantic Richfield Company, New York, N.Y.

No Drawing. Filed May 3, 1971, Ser. No. 139,934

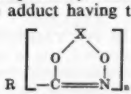
The portion of the term of the patent subsequent to Sept. 29, 1987, has been disclaimed

Int. Cl. C08g *22/00, 22/40*

U.S. Cl. 260—77.5 R **6 Claims**

High molecular weight compositions useful for coatings and films are prepared by reacting

(A) a cyclic nitrile adduct having the structure



wherein R is an organic radical free of nucleophilic groups and having from 2 to about 200,000 carbon atoms, X is:

and *n* ranges from 2 to about 100,000 with

(B) a nucleophilic organic compound having at least 2 reactive hydrogen-containing radicals selected from the group consisting of hydroxyl radicals and thiol radicals in the presence of a suitable catalyst the ratio of (A) to (B) being 1:X, with X varying from less than 1 to 0.

3,813,366

METHOD TO PREPARE NYLON 6 PREPOLYMER PROVIDING A FINAL SHAPED ARTICLE OF LOW OLIGOMER CONTENT

William Howell Wright, Petersburg, Alex John Bingham, Richmond, and William Albert Fox, Chester, Va., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Mar. 21, 1973, Ser. No. 343,594

Int. Cl. C08g *20/14*

U.S. Cl. 260—78 L **7 Claims**

A coupled process for the production of polycaproamide shaped articles from molten anhydrous nascent

polymer is disclosed. The improvement is hydrolyzing to form prepolymer by continuously maintaining a carefully controlled temperature profile, from top to bottom of the hydrolyzer, from a top temperature of 200° to 240° C. and a bottom temperature of 245° to 275° C. with no more than 25° difference between the stages and substantially uniform temperature within each stage by mixing with a high degree of turbulence within each stage to achieve a mixing Reynolds number of from about 250 to about 200,000, and achieving plug flow effect along the length of the reactor by baffles between each stage, so the final product has a water extractables content of less than 3.5 percent and oligomer content of less than 2.5 percent.

3,813,367
LACTAM POLYMERIZATION WITH HALOGEN SUBSTITUTED AROMATIC INITIATORS

Markus Matzner, Edison, and James E. McGrath, Somerville, N.J., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Oct. 10, 1969, Ser. No. 865,487
Int. Cl. C08g *20/18*
U.S. Cl. 260—78 L **22 Claims**

Certain halogen substituted aromatic compounds are utilized as polymerization initiators or activators with alkaline catalysts in the anionic polymerization of lactam monomers to provide long pot life, a rapid polymerization and novel polymers. The initiators are compounds containing at least one carbocyclic aromatic ring substituted with at least one halogen atom which has been activated towards nucleophilic substitution.

3,813,368
ABIETATE MODIFIED POLYSULFIDE POLYMERS

José L. Villa, Heightstown, N.J., assignor to Thiokol Chemical Corporation, Bristol, Pa.

No Drawing. Filed May 12, 1972, Ser. No. 252,646
Int. Cl. C08g *23/00*
U.S. Cl. 260—79 **2 Claims**

A polysulfide polymer is reacted with abietic acid and is effective as an adhesive additive for a polysulfide polymer-based composition used as sealants or bonding agents on various substrates such as glass or aluminum.

3,813,369
CONTINUOUS MASS POLYMERIZATION PROCESS

George A. Latinen, deceased, late of Springfield, Mass., by May V. Latinen, administratrix, Springfield, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed May 25, 1972, Ser. No. 256,660
Int. Cl. C08f *1/06*
U.S. Cl. 260—80.6 **21 Claims**

An improved process for copolymerizing by continuous mass technique alkenyl nitrile compound(s) with monoalkenyl aromatic compound(s) wherein the capabilities of both using reflux and of achieving unusually high conversion levels with unusually high conversion rates are provided. The process utilizes within a reaction zone a combination of homogeneous mixing and vapor phase removal of monomer to control temperature. Copolymers produced by this process display substantially uniform molecular weight distribution and composition distribution.

3,813,370
PROCESS FOR THE CHLORINATION OF POLYMERIC MATERIALS

Gian Paolo Gambaretto and Gianpietro Talamini, Padova, and Giancarlo Palma, Venice, Italy, assignors to Montecatini Edison, S.p.A., Milan, Italy

No Drawing. Filed May 8, 1972, Ser. No. 251,401
Claims priority, application Italy, May 10, 1971, 24,307/71; Jan. 24, 1972, 19,734/72
Int. Cl. C08f *27/03*
U.S. Cl. 260—88.2 S **8 Claims**

Vinyl chloride homopolymers and copolymers and olefinic polymers and copolymers are chlorinated in the dry phase with gaseous chlorine in the presence of a small amount of elemental fluorine in an environment which is substantially free of ultraviolet radiation and organic peroxides.

3,813,371
METHOD FOR CURING A FURFURYL ALCOHOL BINDER

Keith B. Bozer and Lloyd H. Brown, Crystal Lake, Ill., assignors to The Quaker Oats Company, Chicago, Ill.

No Drawing. Filed Jan. 31, 1972, Ser. No. 222,337
Int. Cl. C08f *5/04*
U.S. Cl. 260—88.5 **4 Claims**

This invention relates to a process for curing a furfuryl alcohol binder with a specified acid salt of an aromatic amine, said binder useful for example in the preparation of fiber glass laminates.

3,813,372
METHOD OF MANUFACTURING ACRYLONITRILE POLYMERS HAVING AN EXCELLENT WHITENESS

Yasushi Joh and Teruhiko Sugimori, Otake, Japan, assignors to Mitsubishi Rayon Company Limited, Tokyo, Japan

Continuation of abandoned application Ser. No. 162,921, July 15, 1971. This application Feb. 23, 1973, Ser. No. 335,121
Claims priority, application Japan, July 27, 1970, 45/64,979
Int. Cl. C08f *3/76, 15/02, 15/22*
U.S. Cl. 260—88.7 R **1 Claim**

An acrylonitrile polymer useful for producing acrylonitrile synthetic fiber having an excellent whiteness and a superior heat stability is prepared by the polymerization method wherein the acrylonitrile is polymerized or copolymerized in the presence of a redox catalyst at a concentration of monomer to be polymerized in water which concentration is so adjusted that the concentration of nonpolymerized monomer remaining in water which relates to the yield of the resultant polymer is on or within the quadrilateral ABCD defined in the accompanying drawing.

3,813,373
METHOD FOR PRODUCING HIGH BULK DENSITY POLYVINYL CHLORIDE

Ikoh Ito, Takeshi Sekihara, and Tomoyuki Emura, Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Japan

No Drawing. Filed Oct. 17, 1972, Ser. No. 298,404
Int. Cl. C08f *1/11, 3/30*
U.S. Cl. 260—92.8 W **5 Claims**

Method for producing polyvinyl chloride having a high bulk density of more than 0.6 g./cc., superior free flow property and superior processability by suspension polymerization of vinyl chloride monomer in an aqueous medium in the presence of a specific water-soluble cellulose derivative and a specific alkali metal salt of an inorganic or organic acid by using an agitator having an agitating blade in which the ratio (d/D) of span (d) of the agitating blade to the inside diameter (D) of the polymerization vessel is 0.3 to 0.8 and further the tip speed of the agitating blade is not more than 7 m./sec.

3,813,374
POLYMERIZATION OF CONJUGATED DIOLEFINS WITH CATALYSTS CONTAINING CARBON OXYSULFIDE

Dale C. Perry, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Filed Oct. 19, 1970, Ser. No. 82,189
Int. Cl. C08d *3/04, 3/06, 1/14*
U.S. Cl. 260—94.3 **10 Claims**

There is disclosed a process for the polymerization of conjugated diolefins by means of a catalyst system com-

prising (A) titanium tetrachloride (B) at least one member of the group consisting of (1) organoaluminum compounds defined by the formula:

wherein R_1 is selected from the group consisting of alkyl, cycloalkyl, aryl, alkaryl, arylalkyl and halogen radicals and hydrogen and R_2 and R_3 are selected from the group consisting of alkyl, cycloalkyl, aryl, arylalkyl and alkaryl radicals and (2) the etherates of organoaluminum compounds of the formula:

wherein R_1 is selected from the group consisting of alkyl, cycloalkyl, aryl, alkaryl, arylalkyl and halogen radicals and hydrogen; R_2 and R_3 are selected from the group consisting of alkyl, cycloalkyl, aryl, arylalkyl and alkaryl radicals; R_4 and R_5 are selected from the group consisting of saturated aliphatic, unsaturated aliphatic, saturated alicyclic, unsaturated alicyclic and aromatic radicals and (C) carbon oxysulfide.

3,813,375

MAKING POWDERS OF ETHYLENE POLYMERS

Hans Joachim Klocke, Frankenthal, Dieter Stockburger, Gruenstadt, Volker Gierth, Ludwigshafen, and Gerhard Zeitler, Hessheim, Germany, assignors to Badische Anilin & Soda-Fabrik Aktiengesellschaft, Germany

No Drawing. Filed Mar. 1, 1972, Ser. No. 230,958

Int. Cl. C08f *3/04, 1/92*

U.S. Cl. 260—94.9 GD **6 Claims**

Method of making powders from ethylene polymers by dissolving the ethylene polymers at a temperature above 60° C. in a fluorinated chlorohydrocarbon having from 1 to 4 carbon atoms and 0 to 2 hydrogen atoms, cooling the solution to a temperature below 60° C. or evaporating the solvent, and collecting the pulverized ethylene polymers.

3,813,376

7 - (o - AMINOMETHYLPHENYL - ACETAMIDO)-3-(3-HYDROXYPYRIDAZIN - 6 - YLTHIOMETHYL)-3-CEPHEM-4-CARBOXYLIC ACID

Takayuki Naito, Tokyo, and Jun Okumura, Yokohama, Japan, assignors to Bristol-Myers Company, New York, N.Y.

No Drawing. Filed Aug. 31, 1972, Ser. No. 285,764

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **10 Claims**

7-(*o*-aminomethylphenylacetamido) - 3 - (3-hydroxypyridazin-6 - ylthiomethyl) - 3 - cephem-4-carboxylic acid and its nontoxic, pharmaceutically acceptable salts and especially its dimethanesulfonate derivative are valuable as antibacterial agents, as nutritional supplements in animal feeds and as therapeutic agents in poultry and animals, including man, and are especially useful in the treatment of infectious diseases caused by many Gram-positive and Gram-negative bacteria. 7-(*o*-aminomethylphenylacetamido) - 3 - (3 - hydroxy-pyridazin-6-ylthiomethyl) - 3 - cephem - 4-carboxylic acid is prepared, for example, by treatment at 0° C. with trifluoroacetic acid of the corresponding compound in which the free amino group is protected with a *tert.*-butoxycarbonyl group.

3,813,377

OXIDATIVE DEHYDROCYCLIZATION PROCESS OF IMINES

Marcello Massi Mauri, San Donato Milanese, and Pietro Antonio Moggi, and Ugo Romano, Milan, Italy, assignors to Snam Progetti, S.p.A., Milan, Italy

No Drawing. Filed Nov. 2, 1971, Ser. No. 195,043

Claims priority, application Italy, Nov. 3, 1970, 31,304/70

Int. Cl. C07d *27/64*

U.S. Cl. 260—279 R **7 Claims**

The present invention provides a novel oxidative dehydrocyclization process wherein imines such as N-ethylidenecylohexylamine are used to prepare indole by a reaction in the presence of oxygen and a catalyst such as silica.

3,813,378

PROCESS FOR THE PRODUCTION OF CYCLIC IMIDIC ACID ESTERS

Helmut Witte, and Wolfgang Seeliger, Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

No Drawing. Filed June 2, 1972, Ser. No. 259,310

Claims priority, application Germany, June 4, 1971, 21 27 776.9; Nov. 24, 1971, 21 58 061.0

Int. Cl. C07d *85/36, 87/20*

U.S. Cl. 260—244 **6 Claims**

Δ^2-oxazolines and 5,6-dihydro-4H-1,3-oxazines are produced by heating an organic nitrile and a β- or α- aminoalkanol, at 50–180° C. in the presence of a salt soluble in the reaction mixture of lithium, copper, calcium, zinc, cadmium, manganese, nickel or cobalt and removing the ammonia by-product from the reaction mixture.

3,813,379

THERMALLY STABILIZED THERMOSETTING PLASTIC MATERIAL, AND ARTICLE

Karel J. Brouwers, La Mesa, and Preston J. Heinle, Phoenix, Ariz., assignors to Motorola Inc., Franklin Park, Ill.

Original application Dec. 14, 1970, Ser. No. 97,914. Divided and this application July 20, 1972, Ser. No. 273,358

Int. Cl. C08g *51/52*

U.S. Cl. 260—28 **7 Claims**

Molding materials of the thermosetting type containing halogenated compounds for flame retarding are stabilized against high temperature decomposition by the addition of a stabilizing system of a thioester and an antioxidant. Such stabilized materials are used in encapsulating semiconductive elements in forming improved semiconductor devices.

3,813,380

CONTACT ADHESIVE MIXTURES

Eugen Bock, Leverkusen-Schlebusch, Manfred Dollhausen, Hitdorf, and Horst Muller-Albrecht, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Continuation of abandoned application Ser. No. 275,851, July 27, 1972. This application July 16, 1973, Ser. No. 379,501

Int. Cl. C08g *22/14, 22/26*

U.S. Cl. 260—77.5 AP **1 Claim**

Compositions suitable for use as contact or pressure-sensitive adhesives are provided which compositions are mixtures of a polyalkylene polyether polyol, a diisocyanatodiurethane and a catalyst which promotes the reaction between OH and NCO groups optionally with the inclusion of an aromatic diisocyanate and if desired in the presence of conventional additives such as, for example, pigments, fillers, and the like.

3,813,381

ETHYLENE POLYMERIZATION WITH AMMONIA MODIFIED CATALYST

Frederick J. Karol, Somerset, N.J., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed July 17, 1972, Ser. No. 272,420
Int. Cl. C08f 1/64, 3/06, 15/04
U.S. Cl. 260—88.2 R 19 Claims

Supported bis-cyclopentadienyl chromium [II] catalysts are modified by treatment with ammonia in order to improve the toughness and impact strength of the resulting ethylene polymers made therewith.

3,813,382

ANALOGS OF LUTEINIZING HORMONE RELEASING FACTOR SUBSTITUTED IN POSITION 9

Wayne A. McKinley, Wallingford, and William H. McGregor, Malvern, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Dec. 20, 1972, Ser. No. 317,041
Int. Cl. C07c 103/52; C07g 7/00
U.S. Cl. 260—112.5 5 Claims

Novel decapeptides are described in which the decapeptide pGlu - His - Trp-Ser-Tyr-Gly-Leu-Arg-Pro-Gly-NH_2 identified as the luteinizing hormone-releasing factor has the amino acid in the 9-position of the peptide chain replaced by an aliphatic amino acid. The resulting decapeptides have both luteinizing hormone (LH-RF) releasing factor and follicle-stimulating hormone-releasing factor (FSH-RF) activity.

3,813,383

METHOD OF PRODUCING A MOLLUSCICIDE FROM ENDOD

Aklilu Lemma, Addis Ababa, Robert M. Parkhurst, Menlo Park, and Wilfred A. Skinner, Jr., Portola Valley, Calif., assignors to Ethiopian Science Foundation, Addis Ababa, Ethiopia

No Drawing. Filed Jan. 19, 1973, Ser. No. 325,037
Int. Cl. C07g 17/00; A01n 9/08
U.S. Cl. 260—236.5 5 Claims

A molluscicide is produced from Endod by removing the fatty constituents of Endod by extraction with a fat solvent, soaking the defatted Endod in warm water, extracting the soaked Endod with a solvent which is substantially insoluble or only slightly soluble in water and evaporating at least a portion of the solvent.

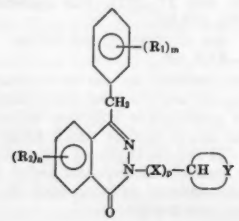
3,813,384

BASICALLY SUBSTITUTED BENZYL PHTHALAZONE DERIVATIVES, ACID SALTS THEREOF AND PROCESS FOR THE PRODUCTION THEREOF

Dietrich Vogelsang, deceased by Ursula Vogelsang Nee Schafer, Heir Helpup, Gerhard Scheffler, Sennei, Norbert Brock, Uerentrup, and Dieter Lenke, Bielefeld, Germany, assignors to Asta-Werke Aktiengesellschaft, Chemische Fabrik, Westfalen, Germany

No Drawing. Filed Jan. 17, 1972, Ser. No. 218,532
Int. Cl. C07d 25/00, 51/06
U.S. Cl. 260—239 A 4 Claims

New basically substituted benzyl phthalazone derivatives of formula I



I

and their pharmacologically acceptable acid addition salts thereof. These new benzyl phthalazone derivatives are excellent antihistamines and therefore useful in the treatment of histamine induced disturbances.

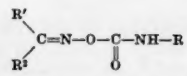
3,813,385

6 - [(LOWER ALKYLIDENE)IMINOOXYCARBONAMIDO]-PENICILLANIC ACIDS AND METHOD OF THEIR PREPARATION

Peter Wolfgang Henniger, Leiden, Netherlands, assignor to American Home Products Corporation, Radnor, Pa.

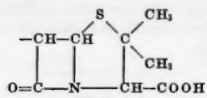
No Drawing. Filed Dec. 17, 1970, Ser. No. 99,276
Claims priority, application Great Britain, Dec. 18, 1969, 61,841/69
Int. Cl. C07d 99/16, 99/24
U.S. Cl. 260—239.1 11 Claims

Novel penicillanic acid and cephalosporanic acid derivatives of the formula

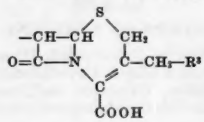


(I)

wherein R is selected from the group consisting of

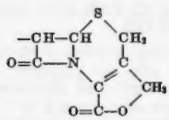


(II)



(III)

and



(IV)

R′ is selected from the group consisting of hydrogen, lower alkyl, lower alkoxycarbonyl, lower alkanoyl, aryl, benzyl, heterocyclic of 5 to 6 atoms in the ring and the hetero atom is nitrogen, oxygen or sulfur linked through a carbon atom and a phenylmethylidene-hydroxyimino, R_2 is selected from the group consisting of lower alkyl, lower alkanoyl and phenyl and R′ and R^2 together with the carbon atom to which they are attached form a cycloalkylidene of 5 to 8 carbon atoms, R_3 is selected from the group consisting of hydrogen and lower alkanoyloxy and the said aryl, benzyl and cycloalkylidene optionally are substituted with at least one member of the group consisting of halogen, lower alkyl and lower alkoxy and their non-toxic, pharmaceutically acceptable salts, esters and amides and their preparation and their use as antibiotics.

3,813,386

6-(2 - SUBSTITUTED-2-TRIPHENYLPHOSPHONIUM ACETAMIDO)PENICILLANIC ACIDS

John H. Sellstedt, King of Prussia, Daniel M. Teller, Devon, and Charles J. Guinosso, Abington, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Nov. 23, 1971, Ser. No. 201,574
Int. Cl. C07d 99/16
U.S. Cl. 260—239.1 3 Claims

Novel 6(2-substituted - 2 - triphenylphosphonium acetamido)penicillanic acids are described which are useful as anti-bacterial agents.

3,813,387

SULPHAMOYLPHENYL PYRROLIDINONES

Rolf Wilhelm Pfirrmann, Lucerne, and Emil Hofstetter, Wolhusen, Switzerland, assignors to Ed. Geistlich Sohne A.G. fur Chemische Industrie

No Drawing. Filed Aug. 4, 1971, Ser. No. 169,062
Claims priority, application Great Britain, Aug. 5, 1970, 37,842/70
Int. Cl. C07d *27/08*
U.S. Cl. 260—239.6 10 Claims

New antiepileptic compounds showing effectiveness against both grand mal and petit mal forms of epilepsy coupled with very low toxicities and good in vivo stability have the 1-(sulphamoylaryl)-pyrrolidin-2-one structure; the pyrrolidine ring carrying as possible substituents aliphatic, cycloaliphatic, cycloalkylidene araliphatic and aryl groups; the sulphamoylaryl portion carrying as possible substituents halogen atoms or aliphatic hydrocarbon, trifluoromethyl, ether, hydroxy or acylamino groups. The compounds are prepared by reaction of a sulphamoylarylamine with a butyrolactone or γ-halobutyryl halide or by halosulphonation of a corresponding 1-arylpyrrolidin-2-one and reaction with ammonia or an amine.

3,813,388

7-[D-(α-AMINO-α-PHENYL-, 2-THIENYL- AND 3-THIENYL-ACETAMIDO)] - 3 - [S-(2-METHYL-1,2,3-TRIAZOLE - 4 - YL)THIOMETHYL]-3-CEPHEM-4-CARBOXYLIC ACIDS

Leonard Bruce Crast, Jr., 8623 Weaver Road, R.D. 4, Clay, N.Y. 13041

No Drawing. Filed Jan. 31, 1972, Ser. No. 222,295
Int. Cl. C07d *99/24*
U.S. Cl. 260—239.1 6 Claims

7-[D-(α-amino-α-phenyl-, 2-thienyl- and 3-thienyl-acetamido)]-3-[S-(2 - methyl - 1,2,3 - triazole - 4 - yl)thiomethyl]-3-cephem-4-carboxylic acids and their nontoxic, pharmaceutically acceptable salts are valuable as antibacterial agents, as nutritional supplements in animal feeds, as agents for the treatment of mastitus in cattle and as therapeutic agents in poultry and animals, including man, and are especially useful in the treatment, particularly by oral administration, of infectious diseases caused by many Gram-positive and Gram-negative bacteria.

3,813,389

PROCESS FOR 7-AMINOCEPHALOSPORANIC ACID

Harold B. Hayes, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed Sept. 3, 1971, Ser. No. 177,869
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 C 6 Claims

Improved process for preparing 7-aminocephalosporanic acid comprising reacting penicillin contaminated cephalosporin C, protected cephalosporin C and salts thereof with a carboxylic acid halide in the presence of an imide such as DMAC or DMF to obtain the mixed anhydride blocked derivative and thereafter cleaving the α-aminoadipoyl side chain therefrom by known process via imino halide and imino ether formation followed by aqueous hydrolysis to provide 7-ACA substantially free of penicillin contaminants.

3,813,390

7-(o-AMINOMETHYLPHENYLTHIOACETAMIDO)-3-(3-HYDROXYPYRIDAZIN - 6 - YLTHIOMETHYL)-3-CEPHEM-4-CARBOXYLIC ACID

Takayuki Naito, Tokyo, and Jun Okumura, Yokohama, Japan, assignors to Bristol-Myers Company, New York, N.Y.

No Drawing. Filed Sept. 6, 1972, Ser. No. 286,630
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 C 7 Claims

7-(o-Aminomethylphenylthioacetamido) - 3 - (3 - hydroxy-pyridazin-6-ylthiomethyl)-3-cephem - 4 - carboxylic acid and its nontoxic, pharmaceutically acceptable salts and especially its dimethanesulfonate derivative are valuable as antibacterial agents, as nutritional supplements in animal feeds and as therapeutic agents in poultry and animals, including man, and are especially useful in the treatment of infectious diseases caused by many Gram-positive and Gram-negative bacteria. 7-(o-aminomethylphenylthioacetamido)-3-(3-hydroxy-pyridazin - 6 - ylthiomethyl)-3-cephem-4-carboxylic acid is prepared, for example, by treatment of 0° C. with trifluoroacetic acid of the corresponding compound in which the free amino group is protected with a *tert.*-butoxycarbonyl group.

3,813,391

7 - [β - (o - AMINOMETHYLPHENYL)PROPIONAMIDO] - 3 - (TETRAZOLO[4,5-b]PYRIDAZIN-6-YLTHIOMETHYL) - 3 - CEPHEM-4-CARBOXYLIC ACID

Takayuki Naito, Tokyo, and Jun Okumura and Hajime Kamachi, Yokohama, Japan, assignors to Bristol-Myers Company, New York, N.Y.

No Drawing. Filed Sept. 6, 1972, Ser. No. 286,793
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 C 7 Claims

7 - [β-(o-aminomethylphenyl)propionamido]-3-(tetrazolo[4,5-b]pyridazin - 6 - ylthiomethyl) - 3 - cephem-4-carboxylic acid and its nontoxic, pharmaceutically acceptable salts and especially its dimethanesulfonate derivative are valuable as antibacterial agents, as nutritional supplements in animal feeds and as therapeutic agents in poultry and animals, including man, and are especially useful in the treatment of infectious diseases caused by many Gram-positive and Gram-negative bacteria. 7-[β-(o-aminomethylphenyl)propionamido]-3-(tetrazolo[4,5 - b]pyridazin-6-ylthiomethyl)-3-cephem-4 - carboxylic acid is prepared, for example, by treatment at 0° C. with trifluoroacetic acid of the corresponding compound in which the free amino group is protected with a *tert.*butoxycarbonyl group.

3,813,392

PYRROLO(1,2,3-*de*)QUINOXALIN - 2(3H)-ONES AND RELATED COMPOUNDS

John H. Sellstedt, 266 Iven Ave., St. Davids, Delaware, Pa. 18327; Milton Wolf, 1058 Windy Knoll Road, West Chester, Pa. 19380

No Drawing. Original application June 9, 1969, Ser. No. 831,723, now abandoned. Divided and this application May 15, 1972, Ser. No. 252,990
Int. Cl. C07d *51/78*
U.S. Cl. 260—250 R 3 Claims

This invention concerns pyrrolo[1,2,3-*de*]quinoxalin-2(3H) - ones and related compounds which are pharmacologically active as central nervous system depressants.

3,813,393

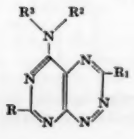
PYRIMIDOTRIAZINES

Kenneth John Maynard Andrews, and Brian Peter Tong, Harpenden, England, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed June 23, 1972, Ser. No. 265,879
Int. Cl. C07d *57/34*
U.S. Cl. 260—249.5 41 Claims

A new class of pyrimidotriazines is described having a general anti-inflammatory activity and specific compounds therein also exhibit a diuretic activity. Methods for the preparation of the instant pyrimidotriazines are also described.

The new pyrimidotriazines are of the following formula



I

wherein R is a trifluoromethyl, lower alkyl, aryl or lower aralkyl group, R^1 is a hydrogen atom or a lower alkyl, aryl or lower aralkyl group, R^2 is a hydrogen atom and R^3 is a hydrogen atom or a lower alkyl, lower alkenyl, lower alkynyl, lower cycloalkyl, aryl, lower aralkyl, hydroxyl, hydroxy-(lower alkyl) or acyl group or R^2 and R^3 each represent a lower alkyl group which may be joined directly or through an oxygen, nitrogen or sulfur atom to form with the nitrogen atom to which they are attached to a 5-membered or 6-membered heteromonocyclic ring.

3,813,394

PURINE DERIVATIVES HAVING HYPOCHOLESTEROLEMIC ACTIVITY

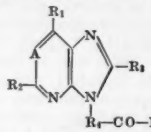
Akira Tensho, Tokorozawa, Takashi Kamiya and Yoshihisa Saito, Suita, Masashi Hashimoto, Toyonaka, and Hideo Seki, Takatsuki, Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Continuation-in-part of application Ser. No. 851,057, Aug. 18, 1969, which is a continuation-in-part of Ser. No. 861,808, Sept. 29, 1969, both now abandoned. This application Mar. 24, 1970, Ser. No. 22,361

Int. Cl. C07d *57/38*

U.S. Cl. 260—252 **16 Claims**

Purine derivatives of the formula:



wherein A is N or N→O, R_1 is hydrogen, halogen, hydroxyl, mercapto, lower alkoxy, ar(lower)alkoxy, lower alkylthio, amino, lower alkylamino, di(lower)alkylamino, ar(lower)alkylamino, acylamino, hydroxyamino, lower alkoxyamino, ar(lower)alkoxyamino or aryloxyamino, R_2 and R_3 are each hydrogen, halogen, hydroxyl, mercapto, amino, lower alkyl, aryl, lower alkoxy, ar(lower)alkoxy or lower alkylthio, R_4 is lower alkylene substituted with one or more hydroxyls (but no hydroxyl group being present at the carbon atom adjacent to the ring nitrogen atom) which may be protected with acyl, lower alkyl, ar(lower)alkyl or, when a pair of hydroxyls exist on the alkylene group, with lower alkylidene or ar(lower)alkylidene and R_5 is hydroxyl, lower or higher alkoxy, amino, lower alkylamino or di(lower)alkylamino, and their salts, which exhibit marked hypocholesterolemic acivity with extremely low toxicity.

3,813,395

4-ARYL ALKYL PIPERAZINO THIENOBENZO THIAZEPINES

Michio Nakanishi, Oita, Tomohiko Munakata and Shinro Setoguchi, Fukuoka, and Sunao Fukunari, Oita, Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

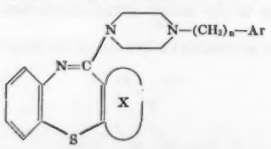
No Drawing. Filed May 13, 1971, Ser. No. 143,179

Claims priority, application Japan, May 13, 1970, 45/41,180, 45/41,181

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 TR **6 Claims**

A thienobenzothiazepine compound of the formula:



wherein Ar is a member selected from the group consisting of a phenyl, pyridyl and thienyl group; *n* is 1 or 2; and X is a thiophene ring, the condensed ring system containing said thiophene ring being a member selected from the group consisting of a thieno[2,3-b][1,5]benzothiazepine and a thieno[2,3-b][1,5]benzothiazepine; and the pharmaceutically acceptable acid addition salts thereof. The present invention also extends to a process for making the aforementioned compounds, a pharmaceutical composition containing said compounds and a method for treating psycho disorders by employing said compound.

3,813,396

1,2-DIHYDROQUINOBENZOXAZEPINE[PIPERAZINYLALKYL]OXIMES

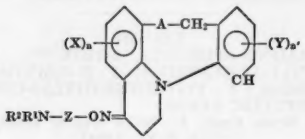
Harry L. Yale, New Brunswick, and Ramesh B. Petigara, Somerset, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Filed Aug. 13, 1971, Ser. No. 171,715

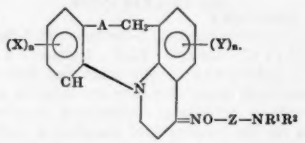
Int. Cl. C07d *51/70*

U.S. Cl. 260—268 PC **8 Claims**

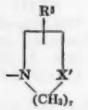
1,2-dihydroquinobenzoxa(or thia)zepine derivatives are provided having the structures



or



wherein A is O or S; X and Y are the same or different and can be halogen, trifluoromethyl, lower alkyl, cycloalkyl, lower alkylmercapto, lower alkoxy, cyano, isocyanido or di-lower alkylsulfamoyl; R^1 and R^2 are the same or different and can be halogen, lower alkyl, aralkyl or alkenyl or NR^1R^2 taken together is a heterocyclic radical having the formula



in which X' represents NR^4, O, S, or CH_2; *r* represents 1, 2 or 3; R^4 represents halogen, lower alkyl, hydroxy-lower alkyl, lower alkanoyloxy-lower alkyl, hydroxy-lower alkoxy-lower alkyl, di(lower alkyl) amino-lower alkoxy-lower alkyl, lower-alkylamino-lower alkyl, di-lower alkyl amino-lower alkyl, amino-lower alkyl, R^3 represents any of the R^4 groups; Z is alkylene or alkenylene; *n* is 0, 1 or 2; and *n'* is 0, 1 or 2; and pharmaceutically acceptable salts thereof.

3,813,397

CERTAIN HEMIOXONAL DYES

Leslie G. S. Brooker, Rochester, Arthur Fumia, Jr., Hilton, and Donald W. Heseltine, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Original application July 20, 1970, Ser. No. 56,657, now Patent No. 3,652,289. Divided and this application Nov. 23, 1971, Ser. No. 201,571

Int. Cl. C07d *91/16*

U.S. Cl. 260—268 C **5 Claims**

Novel trimethine hemioxonal dyes are provided in which the polymethine chain of the dye includes the 1, 2

and 3 carbon atoms of a 1-cyclohexen-3-ylidene nucleus, the 1-carbon atom of said 1-cyclohexen-3-ylidene nucleus having the nitrogen atom of a tertiary amino group attached thereto. Photographic emulsions and elements are also provided featuring the trimethine hemioxonal dyes of the invention as spectral sensitizers or as filter material. A method for preparing the trimethine hemioxonal dyes is also provided which comprises heating a quaternary salt of a 3-chlorocyclohex-2-en-1-ylidene compound having substituted on the 1-carbon atom thereof the nitrogen atom of a tertiary amino group, with an acidic compound having an active methylene group of the type used in the preparation of hemioxonal dyes, in the presence of a basic condensing agent.

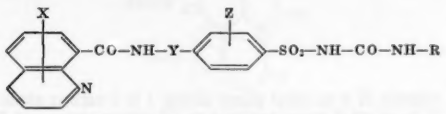
3,813,398

BENZENESULFONYL-SEMICARBAZIDES AND PROCESS FOR THEIR MANUFACTURE

Walter Aumüller, Kelkheim, Taunus, Rudi Weyer, Frankfurt am Main, and Ruth Heerdt, Mannheim, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed June 3, 1971, Ser. No. 149,746
Claims priority, application Germany, Apr. 26, 1971, P 21 20 266.4
Int. Cl. C07d *33/00*
U.S. Cl. 260—283 SA **6 Claims**

Hypoglycemically active benzenesulfonyl - semicarbazides of the formula



wherein X is hydrogen, chlorine, bromine, methyl or methoxy, Y is $-CH(CH_3)-CH_2-$, preferably

$$-CH_2-CH_2-,$$

Z is hydrogen or a hydrocarbon radical of 1 or 2 carbon atoms, which forms together with Y a 5- or 6-membered ring, R is alkylene-imino of 3 to 7 carbon atoms in the ring which may be unsaturated or substituted by 1 or 2 methyl or lower alkyl or methoxy, pentamethylene-imino substituted by endoalkylene of 1 to 3 carbon atoms, hexamethylene-imino substituted by endoethylene in β-ϵ-position, tetrahydro-iso-indoline, 4,7 - endoalkylene-hexahydro- or -tetrahydro-iso-indoline, the endoalkylene containing 1 or 2 carbon atoms and the double bond of the tetrahydro compound being in 5,6-position, and the salts thereof.

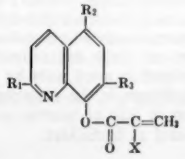
3,813,399

8-OXYQUINOLINE- AND 8-OXYQUINALDINE ACRYLATES

Helmut Huber-Emden, Basel, Adolf Hubele, Riehen, and Guenter Klahre, Reinach, Basel-Land, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Feb. 9, 1971, Ser. No. 114,069
Claims priority, application Switzerland, Feb. 13, 1970, 2,138/70
Int. Cl. C07d *33/48*
U.S. Cl. 260—287 OX **11 Claims**

The present invention relates to new 8-oxyquinolines of the formula



wherein

(a) X represents hydrogen or halogen and R_1 represents hydrogen or methyl, and the substituents R_2 and R_3 represent hydrogen or halogen, or wherein

(b) X represents methyl, R_1 represents hydrogen and one of the two substituents R_2 and R_3 denotes halogen and the other hydrogen, or both substituents R_2 and R_3 denote halogen, and in the case of (b) R_1, R_2 and R_3 represent substituents that differ from one another if R_2 represents chlorine or bromine, or wherein

(c) X represents methyl and R_1 represents methyl and R_2 and R_3 represent hydrogen or halogen, their process of manufacture and their use as active ingredient in pesticidal preparations.

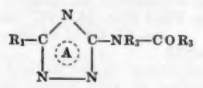
3,813,400

DERIVATIVES OF 3-AMINO-1,2,4-TRIAZOLES

John Terence Arnott Boyle, Maidenhead, and John Christopher Saunders, Taplow, Maidenhead, England, assignors to John Wyeth & Brother Limited, Taplow, Maidenhead, England

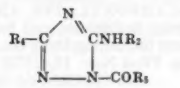
No Drawing. Filed Nov. 29, 1972, Ser. No. 310,289
Claims priority, application Great Britain, Dec. 6, 1971, 56,466/71
Int. Cl. C07d *31/44*
U.S. Cl. 260—295 AM **8 Claims**

The invention relates to triazole derivatives of formula



(A)

where A designates a 1,2,4-triazole ring carrying a hydrogen atom or lower alkyl group R_2 is hydrogen or lower alkyl, one of R_1 and R_3 is a substituted or unsubstituted pyridyl group the other of R_1 and R_3 is a aryl, heteroaryl or phen(lower)alkyl group which can be substituted. The compounds are useful pharmacologically and possess one or more of the following activities: anti-depressant activity, anti-tubercular activity, anti-inflammatory and inhibition of blood platelet aggregation. New triazole derivatives of formula



(B)

where R_2 is hydrogen or lower alkyl, R_4 is optionally substituted pyridyl and R_5 is optionally substituted phenyl, are intermediates for the preparation of compounds of formula A by thermal isomerization.

3,813,401

CERTAIN 5-NITROTHIAZOL-2-YL OXAZOLE AND IMIDAZOLE DERIVATIVES

Peter Graham Hughes, Sunningdale, and John Pomfret Verge, Middle Assendon, England, assignors to Lilly Industries Limited, London, England

No Drawing. Filed Mar. 13, 1972, Ser. No. 234,337
Claims priority, application Great Britain, Mar. 30, 1971, 8,253/71
Int. Cl. C07d *99/04, 99/06*
U.S. Cl. 260—302 H **5 Claims**

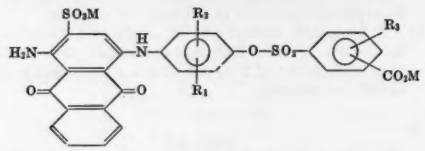
2-(5^1-nitro-2^1-thiazolylthio) oxazole and imidazole compounds are useful as fungicides, being active against plant pathogenic fungi, especially grey mould and downey mildew infections of fruits, and again various fungi pathogenic to animals such as Candida and dermatophytes. The compounds are prepared by condensation of a salt of the appropriate 2-mercapto-oxazole or imidazole with a 2-halo-5-nitrothiazole.

3,813,402
BLUE ANTHRAQUINONE ACID DYES

James F. Feeman, Wyomissing, Pa., assignor to Compton & Knowles Corporation, Worcester, Mass.

No Drawing. Filed Oct. 20, 1971, Ser. No. 190,816
Int. Cl. C09b *1/34*
U.S. Cl. 260—372 2 Claims

Compounds, useful in the dyeing of polyamides, having the formula:



wherein M represents —H, —Na, —K, —Li or NH_4; R_1 and R_2 are —H or —lower alkyl; R_3 is —H, —lower alkyl, —F, —Cl, Br or NO_2.

3,813,403
CATALYTIC HYDROGENATION OF KETO GROUPS IN HETEROPOLYCYCLIC COMPOUNDS

Herbert S. Aaron, Baltimore, and Louis P. Reiff, Joppa, Md., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Dec. 18, 1967, Ser. No. 691,656
Int. Cl. C07d *43/06*
U.S. Cl. 260—292 3 Claims

The invention relates to the method of selective catalytic hydrogenation of keto groups in heteropolycyclic compounds the steps comprising reacting at ambient temperatures heterocyclic compounds comprising keto groups in a mineral acid over a catalyst in the presence of hydrogen, after removing the catalyst the filtrate is made alkaline, extracted, and dried thus providing the hydrogenated non-keto heteropolycyclic compounds.

The compounds thus produced can be employed as intermediates in the production of antioxidants, for example.

3,813,404
TROPANE-2-CARBOXYLATES AND DERIVATIVES

Robert L. Clarke, Bethlehem, and Sol J. Daum, Albany, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

No Drawing. Filed Nov. 15, 1972, Ser. No. 306,918
Int. Cl. C07d *43/06*
U.S. Cl. 260—292 9 Claims

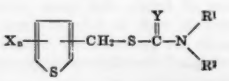
Tropane derivatives having a phenyl or substituted phenyl group in the 3-position and a carbo-lower-alkoxy group in the 2-position, possessing local anesthetic and/or stimulant activity, are prepared by reacting an anhydroecgonine lower-alkyl ester with an arylmagnesium halide.

3,813,405
THIENYLMETHYL-N,N-DISUBSTITUTED-CARBAMATES

Masahiro Aya, Masao Miyamoto, Nobuo Fukazawa, and Shigeki Ohsuga, Tokyo, Japan, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Jan. 28, 1971, Ser. No. 110,581
Claims priority, application Japan, Feb. 2, 1970, 45/8,584
Int. Cl. C07d *29/36, 63/14*
U.S. Cl. 260—293.68 11 Claims

Novel thiol and dithiocarbamic acid esters of the formula



in which

X is halogen,
Y is oxygen or sulfur,
R^1 and R^2, which may be the same or different, are lower alkyl, benzyl, cycloalkyl or aryl, or together with the nitrogen form a heterocyclic radical with 5, 6 or 7 ring members, and
n is 0, 1 or 2,

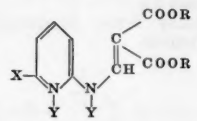
are outstandingly effective as herbicides, especially as selective herbicides for use in controlling weeds in paddy field.

3,813,406
PROCESS FOR PREPARING 1-ALKYL-1,8-NAPHTHYRIDINE COMPOUNDS

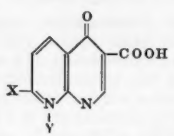
Yasuo Wada, Ikeda, and Nanao Watanabe, Sakai, Japan, assignors to Koei Chemical Co., Ltd., Osaka-shi, Osaka-fu, Japan

No Drawing. Filed Feb. 18, 1971, Ser. No. 97,411
Claims priority, application Japan, Feb. 20, 1970, 45/15,015, 45/15,016
Int. Cl. C07d *39/10*
U.S. Cl. 260—295.5 B 15 Claims

A process for preparing 1-alkyl-1,8-naphthyridine compounds which comprises treating a compound of the formula:



wherein X is an alkyl group having 1 to 3 carbon atoms, Y is an alkyl group having 1 to 10 carbon atoms and R is a lower alkyl group with polyphosphoric acid at a temperature from 160 to 250° C. to give a compound of the formula:



wherein X and Y are each as defined above.

3,813,407
PROCESS FOR THE PREPARATION OF 1-HYDROXY - 2 - (1,1-DIFLUOROALKYL)BENZIMIDAZOLES AND 1-HYDROXY-2-(1,1-DIFLUOROALKYL) - 1H - IMIDAZO(4,5-b)PYRIDINES

George O. P. Doherty, Greenfield, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed Mar. 19, 1970, Ser. No. 21,226
Int. Cl. C07d *49/38*
U.S. Cl. 260—296 B 10 Claims

The present invention is directed to a process for the preparation of 1-hydroxy-2-(1,1-difluoroalkyl)benzimidazoles and 1-hydroxy-2-(1,1-difluoroalkyl)-1H-imidazo(4,5-b)pyridines. The process involves the reduction of, respectively, corresponding 2-nitro-1-(2,2-difluoroalkanamido)benzenes and 3-nitro-2-(2,2-difluoroalkanamido) pyridines, to intermediates which undergo a spontaneous cyclodehydration to yield the ultimate products. The reduction is achieved in good yield by the use, as reducing agent, of hydrogen in the presence of a catalyst, or tin, zinc, or iron in acid or neutral solution. All of the products are useful as herbicides.

3,813,408
1H-IMIDAZO(4,5-b)PYRIDINE COMPOUNDS

George O. P. Doherty, Greenfield, Ind., and Kenneth H. Fuhr, Columbus, Ohio; said Doherty now by change of name George O. P. O'Doherty; assignors to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Continuation-in-part of abandoned application Ser. No. 21,535, Mar. 20, 1970. This application Sept. 17, 1971, Ser. No. 181,574
Int. Cl. C07d *31/42*
U.S. Cl. 260—296 H 8 Claims

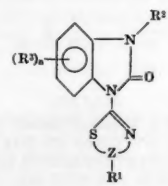
Substituted 1-hydroxy-2 - (1,1 - difluoroalkyl) - 1H-imidazo(4,5-b)pyridine compounds useful as herbicides; and intermediates useful in the synthesis of these compounds. In addition to exhibiting herbicidal activity, the substituted 1 - hydroxy-2-(1,1-difluoroalkyl)-1H-imidazo-(4,5-b)pyridine compounds are of low mammalian toxicity.

3,813,409
BENZIMIDAZOLINONE COMPOUNDS

Rudiger D. Haugwitz, Titusville, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Filed July 31, 1972, Ser. No. 276,507
Int. Cl. C07d *49/38*
U.S. Cl. 260—306.7 7 Claims

Benzimidazlinone compounds which exhibit anti-inflammatory activity have the following formula



I

wherein

Z is ethylene or propylene;

R^1 is hydrogen, methyl, ethyl, phenyl, nitrophenyl, benzyl, phenethyl, tolyl or xylyl;

R^2 is hydrogen; alkyl of from 1 to 5 carbons; benzyl; nitrobenzyl; phenethyl; nitrophenethyl;

wherein Z and R^1 are as defined above; alkoxycarbonyl wherein the alkoxy radical is from 1 to 10 carbon atoms; phenoxycarbonyl; or substituted phenoxycarbonyl wherein the substituent is nitro, halo or alkyl of from 1 to 5 carbons; acyl of from 2 to 6 carbon atoms; benzoyl or substituted benzoyl wherein the substituent is halogen or alkyl of from 1 to 3 carbons; symmetrically dialkyl-substituted carbamoyl wherein the alkyl radical has from 1 to 3 carbons; and dialkylaminoalkylene wherein the dialkyl radicals have from 1 to 3 carbons and the alkylene radical has 2 or 3 carbons;

R^3 is hydrogen, halogen, nitro, cyano, trifluoromethyl, alkyl of from 1 to 3 carbon atoms, alkoxy of from 1 to 3 carbn atoms, amino, dialkylamino wherein the alkyl radical has from 1 to 3 carbon atoms, alkanoyl of from 2 to 6 carbons, alkylamido of from 2 to 6 carbons, or benzoyl; and

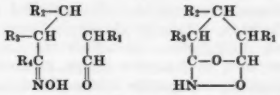
n is 0, 1 or 2.

3,813,410
7-AZA-6,8-DIOXA-BICYCLO-3,2,1-OCTANE

Werner Heimberger, Hanau (Main), and Wolfgang Weigert, Offenbach am Main, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

No Drawing. Filed June 3, 1970, Ser. No. 43,236
Claims priority, application Germany, June 3, 1969, P 19 28 264.5
Int. Cl. C07d *85/06*
U.S. Cl. 260—307 F 1 Claim

There are prepared glutaraldehyde monooximes of the tautomeric forms.



Where R_1, R_2, R_3, and R_4, are the same or different and are hydrogen, alkyl of 1 to 6 carbon atoms, $—CH(OR_5)_2$ —CN, $—CONH_2$ and $—COOR_6$ where R_5 and R_6 are hydrogen or alkyl of 1 to 6 carbon atoms.

3,813,411
PROCESS FOR ISOXAZOLYL LACTONES

Gabriel Saucy, Essex Fells, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Original application Jan. 5, 1970, Ser. No. 811, now Patent No. 3,691,189. Divided and this application June 5, 1972, Ser. No. 259,724
Int. Cl. C07d *85/22*
U.S. Cl. 260—307 H 3 Claims

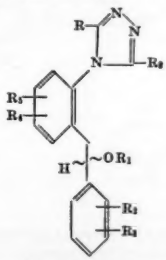
Alternate process routes to 7 - (3,5-disubstituted-4-isoxazolyl)-5-hydroxy heptanoic acid lactone and its 3- and/or 4- optionally alkyl substituted analogs are described. The preparative routes involve multistep procedures starting from aminoethyl substituted tetrahydropyranols or their alkyl substituted analogs. The final product lactones are known intermediates useful in the preparation of pharmacologically valuable steroidal compounds.

3,813,412
CERTAIN TRIAZOLYL BENZHYDROL COMPOUNDS

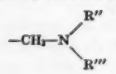
Martin Gall, Kalamazoo, and Jackson B. Hester, Jr., Galesburg, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Aug. 18, 1971, Ser. No. 172,919
Int. Cl. C07d *55/06, 57/00, 99/06*
U.S. Cl. 260—308 R 4 Claims

Compounds of the formula VI



wherein R is selected from the group consisting of hydrogen, alkyl of 1 to 3 carbon atoms, inclusive, cycloalkyl of 3 to 8 carbon atoms, inclusive, phenyl, benzyl, —COOR' in which R' is alkyl defined as above, and a heterocyclic aromatic radical of 5 and 6 ring atoms containing from 1 to 4 hetero atoms selected from the group consisting of N, S, and O; wherein R_0 is



in which R'' and R''' are selected from the group consisting of hydrogen, alkyl defined as above, or together

are piperidine, pyrrolidine, or morpholine; wherein R_1 is hydrogen, acetyl, or propionyl; but acetyl or propionyl only when R'' and R''' are other than hydrogen, and wherein R_2, R_3, R_4, and R_5 are selected from the group consisting of hydrogen, alkyl of 1 to 3 carbon atoms, inclusive, halogen, nitro, cyano, trifluoromethyl, amino, and alkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, alkanoylamino, and dialkylamino in which the carbon chain moieties are of 1 to 3 carbon atoms, inclusive; and the pharmacologically acceptable acid addition salts thereof are prepared by reducing a 2-(3,5-disubstituted-4H-1,2,4-triazol-4-yl)-benzophenone I to obtain the corresponding 2-(3,5-disubstituted-4H-1,2,4-triazol-4-yl)benzhydrol (II) or by reducing with borane a 4-(2-benzoylphenyl)-5-substituted-4H-1,2,4-triazole - 3 - carboxaldehyde 3-(o-acyloxime) IV [obtained by acylating the corresponding oxime (III)] to give the corresponding 2-[3-(aminomethyl) - 5 - substituted-4H-1,2,4-triazol - 4 - yl]benzhydrol (V).

The novel compounds of formula VI are active sedatives.

3,813,413
HYDROXYARYLPOLYMETHYLENESULFONIUM ZWITTERIONS

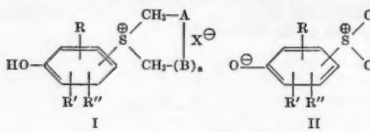
Melvin J. Hatch, Socorro, N. Mex., and Masao Yoshimine, Hugh B. Smith, and Donald L. Schmidt, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Original application Oct. 15, 1969, Ser. No. 866,763, now Patent No. 3,636,052, dated Jan. 18, 1972. Divided and this application Mar. 29, 1971, Ser. No. 129,118

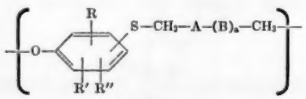
Int. Cl. C07d *63/08*

U.S. Cl. 260—330.5 **3 Claims**

Hydroxyarylpolymethylenesulfonium salts of Formula I, prepared by condensation of a phenol and a polymethylenesulfide, can be converted into a sulfonium hydroxide inner salt II and then thermally polymerized to yield polymers containing a plurality of groups of Formula III:



I II



III

These polymers and copolymers are useful water resistant thermoplastic resins and impregnants.

3,813,414
PREPARATION OF COUMARIN

Samuel Kahn, Rutherford, N.J., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed June 30, 1972, Ser. No. 267,776

Int. Cl. C07d *7/28*

U.S. Cl. 260—343.2 R **12 Claims**

Preparing coumarin by reacting salicylaldehyde and and acetic anhydride in contact with preformed alkali metal biacetate.

3,813,415
PROCESS FOR THE PREPARATION OF 3-(BETA DIALKYLAMINO-ETHYL)-4 - ALKYL-7-CARBOETHOXYMETHOXYCOUMARINS

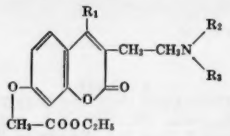
Henryk Kycia and Danuta Chmielewska, Warsaw, Hanna Rolak, Zyrardow, Zbigniew Michno and Jan Zaniuk, Grodzisk Mazowiecki, Janusz Surgiewicz, Warsaw, Ferdynand Stefaniak, Grodzisk Mazowiecki, Przemyslaw Lenkowski, Milanowek, and Anna Kobosko, Grodzisk Mazowiecki, Poland, assignors to Grodziskie Zaklady Farmaceutyczne "Polfa" Przedsiebiorstwo Panstwowe

Filed July 28, 1972, Ser. No. 276,262

Int. Cl. C07d *7/26*

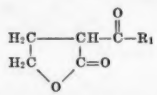
U.S. Cl. 260—343.2 R **10 Claims**

3 - (beta-dialkylaminoethyl) - 4-alkyl-7-carboethoxymethoxycoumarin of the formula:



in which R_1, R_2 and R_3 stand for a lower alkyl group containing 1–3 carbon atoms and its hydrohalides.

The above-mentioned compounds proved to be drugs used in case of circulatory system diseases. The said compounds are produced in the reaction of resorcinol with a gamma-butyrolactone derivative of the formula:



or by addition of a hydrogen halide in the presence of phosphorous acid (P^{III}) then the thus obtained 3-(beta-haloethyl-4-alkyl-7-hydroxycoumarin is subjected to reaction with a haloacetic acid ethyl ester in the presence of alkali metal carbonate and a catalytic quantity of diethylformamide or water and potassium iodide. The thus obtained 3-(beta-haloethyl)-4-alkyl-7-carboethoxymethoxycoumarin is subjected to reaction with a dialkylamine and the thus obtained product is isolated as a complex compound with zinc chloride and if necessary converted to the hydrohalide.

3,813,416
SUBSTITUTED GAMMA-BUTYROLACTONES DERIVED FROM C_{16} AND GREATER UNSATURATED ACIDS

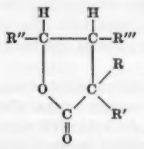
El Ahmadi I. Heiba, Princeton, and Ralph M. Dessau, Highland Park, N.J., assignors to Mobil Oil Corporation

No Drawing. Continuation-in-part of applications Ser. No. 799,940, Feb. 17, 1969, and Ser. No. 30,582, Apr. 21, 1970, which is a continuation-in-part of application Ser. No. 714,447, Mar. 20, 1968, all now abandoned. This application Sept. 7, 1971, Ser. No. 178,392

Int. Cl. C07d *5/06*

U.S. Cl. 260—343.6 **12 Claims**

This specification discloses a lactone having the formula



In this formula R and R' are hydrogen or an alkyl group containing 1 to 3 carbon atoms, R is the same as or different from R' and the total number of carbon atoms

in R and R' does not exceed 3. One of R'' or R''' is an alkyl or an alkenyl group, and the other is a carboxyalkyl, carboxyalkenyl, esteralkyl, or esteralkenyl group, the sum of the number of carbon atoms in R'' and R''' being at least 14. These lactones can be employed to produce a long chain dicarboxylic acid having a gamma- or beta-hydroxy group which can be used in forming alkyd resins or detergents. The lactones are also useful as lubricants for metal parts.

3,813,417
CYCLOALKYL[f][1]BENZOPYRANS

Noal Cohen, Montclair, Michael Rosenberger, Caldwell, and Gabriel Saucy, Essex Fells, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Aug. 26, 1970, Ser. No. 67,296
Int. Cl. C07d *7/18*
U.S. Cl. 260—345.2 **23 Claims**

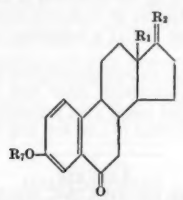
A multi-step, stereospecific total synthesis of steroids utilizing intermediates having a cyanoalkyl A-ring precursor is disclosed. The initial starting materials for this process are the relatively inexpensive and commercially available reagents γ-butyrolactone and sodium cyanide. The process is suitable for the preparation of racemic or optically active, medicinally valuable steroids, particularly 19-norsteroids. It is a feature of this process that conditions employed during the multiple step synthesis are selected so as to retain the normally labile nitrile group even during hydrogenation and hydrolysis steps. In this manner, it is possible to employ the nitrile group as an A-ring precursor without resorting to protective groups as was heretofore found necessary in previous steroid total synthesis processes.

3,813,418
PROCESS FOR THE PREPARATION OF 6-KETO-$\Delta^{1,3,5(10)}$ STEROIDS

Helmut Hofmeister, Henry Laurent, Klaus Prezewowsky, and Rudolf Wiechert, Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Germany

No Drawing. Filed July 12, 1972, Ser. No. 271,076
Int. Cl. C07c *169/20, 169/32*
U.S. Cl. 260—397.4 **11 Claims**

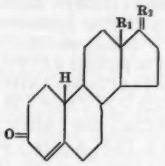
A-ring aromatic steroids having estrogenic activity of the general formula



wherein R_1 is alkyl of 1–3 carbon atoms; R_2 is =O,

in which R_3 is hydrogen or acyl of up to 6 carbon atoms and R_4 is hydrogen or saturated or unsaturated alkyl of up to 4 carbon atoms, or

in which R_5 and R_6 are hydrogen, hydroxy or acyloxy, and R_7 is hydrogen, alkyl of up to 4 carbon atoms or acyl, are prepared by reacting a 3-keto-Δ^4-steroid of the general formula



wherein R_1 and R_2 have the values given above, with a basic reagent in a high-boiling polar solvent in the presence of oxygen at temperatures of 70–150° C.; and optionally thereafter esterifying or etherifying any free hydroxy groups present in the product in a conventional manner.

3,813,419
PREPARATION OF PHENOLIC ETHERS

Nicholas J. Bach and Eugene Farkas, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Continuation-in-part of application Ser. No. 127,771, Mar. 24, 1971, now Patent No. 3,697,558. This application Apr. 15, 1971, Ser. No. 134,420
Int. Cl. C07c *167/30*
U.S. Cl. 260—397.5 A **3 Claims**

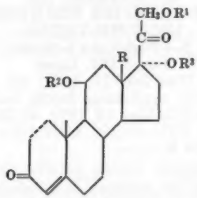
An improved process for preparing cyclopentyl ethers of phenols.

3,813,420
13-POLYCARBONALKYL-3,11,17,20,21-PENTAOXYGENATED-18-NORPREGNENES

George H. Douglas, Paoli, Pa., Warren R. Faust, Newark, Del., and Herchel Smith, Wayne, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Original application Feb. 5, 1969, Ser. No. 799,148, now abandoned. Divided and this application Aug. 17, 1971, Ser. No. 172,544
Int. Cl. C07c *169/34*
U.S. Cl. 260—397.45 **3 Claims**

13-polycarbonalkyl (PCA) - 3,11,17,20,21 - pentaoxygenated - 18 - norpregnenes, Δ^1-dehydroanalogs and acyl esters thereof, particularly of Formula I:



I

wherein R is alkyl of 2–6 carbon atoms, R^1, R^2 and R^3 are hydrogen or acyl and the broken line indicates an optional double bond, are provided.

One pathway comprises epoxidizing and isomerizing a 13 - PCA - 17α - ethyl - 3 - alkoxygona - 1,3,5(10),8-tetraene-17-ol (II) to produce a 13-PCA - 17α - ethyl-3-alkoxygona - 1,3,5(10),8 - tetraen - 11 - on - 17 - ol (III); reducing (III) produces a 13-PCA-17α-ethyl - 3 - alkoxygona - 1,3,5(10) -trien-11-on-17-ol (IV); reducing (IV) produces a 13 - PCA - 17α - ethyl - 3 - alkoxygona-1,3,5(10) - trien - 11β,17α - diol (V); acylating (V) to produce the corresponding 11-acylate (VI); dehydrating (VI) to produce a 13-PCA - 3 - alkoxy - 18,19 - dinorpregna-1,3,5(10),17(20) - tetraen - 11β - ol, acylate (VII); removing the protective acylate group to produce a 13-PCA-3 - alkoxy - 18,19 - dinorpregna-1,3,5(10),17(20)-tetraen-11β-ol (VIII); reducing (VIII) to produce a 13-PCA-3-

alkoxy - 18,19 - dinorpregna - 2,5(10),17(20) - trien-11β-ol (IX); hydrolyzing (IX) to produce a 13-PCA-18, 19-dinorpregna - 5(10),17(20) - dien - 3 - on - 11β - ol (X); methylenating (X) to produce a 13-PCA-18-norpregna - 4,17(20) - diene-3-on-11β-ol (XI); oxidatively hydroxylating (XI) to produce a 13-PCA - 18 - norpregn-4-en - 3,20 - dione-11β,17α-diol (XII); iodinating (XII) to produce a 13-PCA - 21 - iodo - 18 - norpregn-4-ene-3,20 - dione - 11β,17α - diol (XIII); and alkanoylizing (XIII) to produce a 13-PCA - 18 - norpregn-4-en-3,20-dione - 11β,17α,21 - triol, 21-acylate (Ia). Hydrolysis of (Ia) provides the corresponding 21-free alcohol (Ib); acylation of (Ib) provides the corresponding acylate (Ic). Delta - 1 - dehydrogenation, chemically or microbiologically, provides the corresponding dehydro analogs (Id, Ie and If).

In a second pathway, (XII) is converted to the corresponding enamine (XVI); acidification and bromination of (XVI) produces the corresponding 21-bromo-enamine salt (XVII); hydrolysis of (XVII) produces the corresponding 21-bromo - 13 - PCA - 18 - norpregn-4-en-3,20-dione - 11β,17α - diol (XIIIa); and alkanoylization of (XIII) produces (Ia).

Compounds (I) are pharmacologically active as anti-inflammatory agents, reducing experimentally-induced edemae in laboratory animals. Compounds (XI), (XII), (XIII), (XIIIa), (XVI) and (XVII) are novel and valuable intermediates for (I).

3,813,421
USE OF EPOXIDES IN THE PREPARATION OF HIGHER FATTY ACID ANHYDRIDES

John B. McKelvey and Ruth R. Benerito, New Orleans, La., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed Mar. 5, 1973, Ser. No. 337,791
Int. Cl. C07c *53/00, 57/00;* C08h *9/00*
U.S. Cl. 260—398 1 Claim

This invention relates to a process for the preparation of higher fatty acid anhydrides. More particularly, this invention relates to the use of epoxides in preparation of higher fatty acid anhydrides.

3,813,422
SURFACE MODIFIER FOR SYNTHETIC HIGH POLYMERS

Hideo Marumo, 5–4 Nishikuba 3-chome, Musashino-shi, Tokyo 180, Japan

No Drawing. Filed July 22, 1971, Ser. No. 165,355
Claims priority, application Japan, July 23, 1970, 45/64,552; May 10, 1971, 46/30,394
Int. Cl. C07c *101/26;* C07f *3/06, 7/22*
U.S. Cl. 260—429 R 13 Claims

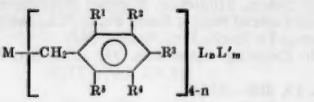
Certain compounds having specific chemical formula and belonging to the category of amphoteric surface active agents which are metal (other than alkali metal) or amine derivatives of hydroxyalkoxyhydrocarbylamines or quaternary ammonium hydroxides or derivatives thereof having one or more of the hydroxyl groups of the hydroxyalkoxy portion of the molecule replaced by carboxymethoxy and/or having a carboxymethyl group attached to a nitrogen atom and which are capable of making wholesale improvement of various surface properties of synthetic high polymers such as man-made fibers, plastics, paints and printing inks. Said various surface properties of synthetic high polymers that can be improved together by the said compounds include wettability, anti-stain, anti-soil, soil-release, cleanability, anti-fog, adhesion, dyeability, color fastness of dyed fibers, hygroscopicity, lubrication, softness and flexibility, mold releasability, anti-block, anti-tack, antistatic, dispersion, stability to light, antioxidation, and other surface properties.

3,813,423
ORGANOMETALLIC COMPOUNDS AND USES THEREOF

Alexander Joseph Peter Pioli, William Brian Hollyhead, and Peter Frank Todd, Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Original application May 27, 1970, Ser. No. 41,074, now Patent No. 3,681,317. Divided and this application Mar. 14, 1972, Ser. No. 234,684
Claims priority, application Great Britain, May 28, 1969, 26,923/69, 26,924/69
Int. Cl. C07f *7/00, 7/28*
U.S. Cl. 260—429.3 6 Claims

Organometallic compounds of the general formula



where

M is a Group IV transition metal
R^{1-5} are substituents which may be the same or different
n is an integer from 0 to 3, provided that when M=titanium and $n=0$, R^{1-5} are not all hydrogen,
L is an anionic ligand
L′ is a neutral ligand and
m is an integer from 0 to 2.

Also processes for their preparation, and their use as olefin, especially ethylene, polymerization initiators.

3,813,424
PROCESS OF THE MANUFACTURE OF DIALKYLTIN OXIDE

Yasuo Hayashi and Yoshiaki Adachi, Fukushima-ken, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed June 2, 1972, Ser. No. 259,246
Claims priority, application Japan, June 4, 1971, 46/39,177; June 19, 1971, 46/44,067, 46/44,068
Int. Cl. C07f *7/22*
U.S. Cl. 260—429.7 8 Claims

The invention relates to the process for the direct manufacture of dialkyltin oxide through such reaction steps that alkyl iodide is reacted directly with metallic tin to dialkyltin iodide which is then hydrolyzed to the desired product.

The main object of the invention is to provide a process for the manufacture of dialkyltin oxide with least possible loss of iodine and at a maximum possible purity of the final product.

For this purpose, an aqueous alkaline solution appeared from a certain processing stage and containing unrecovered alkali metal iodide after execution of the recovery step thereof is returned to said first step for recirculation.

3,813,425
PROCESS FOR PRODUCING POLYSILOXANE USEFUL AS BRAKE FLUIDS

Frank J. Traver, Troy, N.Y., assignor to General Electric Company

No Drawing. Filed Mar. 17, 1971, Ser. No. 125,396
Int. Cl. C07f *7/08*
U.S. Cl. 260—448.2 E 11 Claims

A process for forming an ester polysiloxane comprising reacting in the presence of water, a diorganopolysiloxane of the formula R_2SiX_2 with cyanoalkylchlorosilane of the formula $RSi(X)_2C_gH_{2g}CN$ and a silane of the formula $R'R_2SiX$ where R is selected from monovalent hydrocarbon radicals and halogenated monovalent hydrocarbon radicals, R′ is the same as R or $—C_gH_{2g}CN$, X is a hydrolyzable radical selected from halogen, alkoxy, aryloxy and acyloxy radicals, g is a whole number that varies from 1 to 20, to obtain a polysiloxane, which polysiloxane is then esterified in the presence of a catalyst with an alcohol.

3,813,426

S,S-2-CHLOROALKYL THIOPEROXYOXAMATES AND THEIR MANUFACTURE

Wendell Gary Phillips, Olivette, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Feb. 4, 1972, Ser. No. 223,709
Int. Cl. C07c *69/00*
U.S. Cl. 260—453 R 12 Claims

S,S-2-chloroalkyl thioperoxyamates are prepared from oxamoyl sulfenyl chlorides by reaction with episulfides. The S,S-2-chloroalkylthioperoxyoxamates are pesticidally active and particularly useful as herebicides.

3,813,427

CHRYSANTHEMIC ACID ESTERS

John Mervyn Osbond, Hatfield, and James Charles Wickens, St. Albans, England, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 117,147, Feb. 19, 1971. This application Sept. 28, 1971, Ser. No. 184,615
Claims priority, application Great Britain, Oct. 20, 1970, 49,737/70
Int. Cl. C07c *69/74*
U.S. Cl. 260—468 H 11 Claims

Chrysanthemic acid esters of oxy or thio phenyl butynyl alcohols or phenyl pentynyl alcohols. The phenyl ring may include a chloro or lower alkyl substituent. The esters are useful as insecticides.

3,813,428

PRODUCTION OF MONOCARBOXYLIC ACIDS

Frank E. Paulik, Houston, Tex., and Arnold Hershman, Creve Coeur, Walter R. Knox, Town and Country, and James F. Roth, Creve Coeur, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation of application Ser. No. 752,794, Aug. 15, 1968, which is a continuation-in-part of applications Ser. No. 628,578 and Ser. No. 628,581, both Apr. 5, 1967, all now abandoned. This application June 15, 1972, Ser. No. 263,332
Int. Cl. C07c *51/12*
U.S. Cl. 260—532 18 Claims

The present invention relates to a process for the preparation of monocarboxylic acids, specifically by the reaction of alcohols substituted at the alpha carbon atom, having the formula R—CH_2OH, and having from 2 to 30 carbon atoms, where R is phenyl or hydroxymethyl; and halogen derivatives thereof in which the OH radical is substituted by Cl, Br, or I; ester derivatives thereof in which the carboxylic acid moiety of the ester has from 1 to 20 carbon atoms; and ether derivatives thereof; with carbon monoxide in the presence of catalyst compositions essentially comprising rhodium or iridium compounds and complexes, together with a halide promoter.

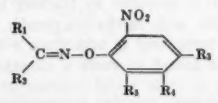
3,813,429

OXIME ETHERS

Adolf Hubele, Riehen, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Application June 16, 1970, Ser. No. 46,832, now Patent No. 3,733,359, which is a continuation-in-part of abandoned application Ser. No. 521,413, Jan. 18, 1966. Divided and this application Mar. 8, 1973, Ser. No. 339,246
Claims priority, application Switzerland, Jan. 22, 1965, 915/65; July 9, 1965, 9,630/65
Int. Cl. C07c *101/42*
U.S. Cl. 260—471 R 3 Claims

New oxime ethers and pesticidal and herbicidal preparations containing them are disclosed. The oxime ethers correspond to the formula



wherein R_1 is a hydrogen atom or a lower alkyl radical; R_2 is an aliphatic, cycloaliphatic, araliphatic, aromatic or heterocyclic radical; or wherein R_1 and R_2 form part of a saturated or unsaturated carbocycle or a 5-, 6- or 7-membered heterocycle; R_3 is a nitro, trifluoromethyl, formyl, lower carbalkoxy, sulfamyl or mono- or di-lower alkyl sulfamyl radical; R_4 and R_5 each is a hydrogen or halogen atom, an amino, mono- or di-lower alkyl amino, lower alkoxy, cycloalkoxy, lower alkylthio, nitro, lower carbalkoxy, arylthio, lower aralkylthio or lower alkyl group, or 5-, 6- or 7-membered heterocycle.

3,813,430

1-ARYL-2-ALKYL OR -ALKENYL-3,4-DIHYDRONAPHTHALENES

Donald K. Phillips, East Greenbush, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

No Drawing. Filed Oct. 26, 1970, Ser. No. 84,135
Int. Cl. C07c *39/12, 43/20, 69/14*
U.S. Cl. 260—479 R 16 Claims

Certain 1-aryl-2-alkyl or -alkenyl-3,4-dihydronaphthalenes, having hypocholesteremic and antiseptic action, are prepared via Grignard or allied reactions on the corresponding 1-tetralones.

3,813,431

p-[1-(NONYLTHIO)ETHYL]BENZENESULFONATES

Michael A. Lintner, Framingham, and Louis Long, Jr., Concord, Mass., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Filed May 21, 1969, Ser. No. 826,716
Int. Cl. C07c *143/24*
U.S. Cl. 260—505 R 5 Claims

Novel *p*-[1-(nonylthio)ethyl]benzenesulfonates useful as surface active agents prepared by reacting *p*-(1-bromoethyl)benzenesulfonamide or ethyl *p*-(1-bromoethyl)-benzenesulfonate with sodium nonylmercaptide.

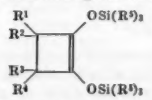
3,813,432

SUBSTITUTED 1-HYDROXY CYCLOPROPANE-1-CARBOXYLIC ACIDS

Hans-Georg Heine, Hans-Michael Fischler, and Willy Hartmann, Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed June 2, 1972, Ser. No. 258,967
Claims priority, application Germany, June 8, 1971, P 21 28 327.2
Int. Cl. C07c *61/04*
U.S. Cl. 260—514 H 11 Claims

1-hydroxy cyclopropane-1-carboxylic acids are prepared by treating compounds having the formula



(II)

with chlorine and/or bromine at a temperature of below +30° C., thereafter adding a protic solvent to the reaction mixture and isolating the cyclopropane compound. Certain substituted 1-hydroxy cyclopropane-1-carboxylic acids are also disclosed.

3,813,433

16-METHYL AND ETHYL PGE_1 AND 16,16-DIMETHYL AND DIETHYL PGE_1

John E. Pike, Kalamazoo, and William P. Schneider, Kalamazoo Township, Kalamazoo County, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Continuation-in-part of application Ser. No. 123,388, Mar. 11, 1971, which is a continuation-in-part of application Ser. No. 648,992, June 26, 1967, both now abandoned. This application July 24, 1971, Ser. No. 274,822
Int. Cl. C07c *61/36*
U.S. Cl. 260—514 D 7 Claims

Prostaglandin E_1-type, F_1-type, A_1-type, and B_1-type compounds with one or two methyl or ethyl substituents

at the C–16 position are disclosed. These are useful for the same pharmacological purposes as the unsubstituted prostaglandins.

3,813,434
PREPARATION OF PURE GLYCINE
Nelson S. Marans, Silver Spring, Md., assignor to W. R. Grace & Co., New York, N.Y.
No Drawing. Filed June 6, 1972, Ser. No. 260,164
Int. Cl. C07c *99/12*
U.S. Cl. 260—534 E **9 Claims**

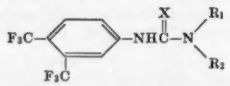
In the preparation of glycine from ammonia and glycolonitrile, the recovery of the pure glycine product free of contamination with iminodiacetic acid is accomplished by ion exchanging an aqueous solution containing a mixture of glycine and iminodiacetic acid, using an anion exchange resin. Thus, glycine is separated and recovered while the iminodiacetic acid impurity is retained by the basic ion exchange resin. The iminodiacetic acid may then be recovered by use of an acid having an ionization constant greater than 1×10^{-3}.

3,813,435
PROCESS FOR PREPARING METHYL-PHOSPHONOTHIOIC DICHLORIDE
Alvin P. Wood, Holiday, Fla., and Kenneth Wayne Ratts, Creve Coeur, Mo., assignors to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Oct. 27, 1969, Ser. No. 869,908
Int. Cl. C07f *9/42*
U.S. Cl. 260—543 P **10 Claims**

Method of making methylphosphonothioic dichloride from an alkali metal chloride, hydrogen sulfide, and a fluid mix of methyl trichlorophosphonium tetrachloroaluminate and methyl trichlorophosphonium heptachlorodialuminate.

3,813,436
PHENYLUREA DERIVATIVES AND PROCESS FOR THEIR MANUFACTURE
Dieter Duerr, Bottmingen, and Erwin Nikles, Liestal, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland
No Drawing. Filed May 19, 1971, Ser. No. 145,007
Claims priority, application Switzerland, May 21, 1970, 7,522/70
Int. Cl. C07c *127/00*
U.S. Cl. 260—553 A **3 Claims**

Compounds of the formula



wherein X represents oxygen or sulphur, R_1 represents hydrogen, a lower alkyl, alkenyl, alkinyl or alkoxy radical and R_2 represents a lower alkyl or alkenyl radical, or R_1 and R_2 together with the nitrogen atom to which they are bound form an optionally substituted heterocyclic ring and/or a heterocyclic ring interrupted by oxygen or sulphur.

3,813,437
N-2-ETHYLHEXYL-N'-ARYL UREAS
Dieter Duerr, Bottmingen, Hans Rudolf Hitz, Muttenz, Max Duennenberger, Frenkendorf, and Max Schellenbaum, Muttenz, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland
No Drawing. Continuation-in-part of application Ser. No. 7,425, Jan. 12, 1970, which is a division of application Ser. No. 694,121, Dec. 28, 1967, now Patent No. 3,592,932. This application July 7, 1972, Ser. No. 269,686
Claims priority, application Switzerland, Oct. 17, 1967, 14,462/67
Int. Cl. C07c *127/16*
U.S. Cl. 260—553 A **3 Claims**

The present invention provides N-2-ethylhexyl-N'-arylureas which are useful as active ingredients in preparations for combating harmful bacteria.

3,813,438
PROCESS FOR PREPARING N-SUBSTITUTED ACRYLAMIDES
Akira Oshima, Mumazu, and Kazuhiko Tsuboshima and Nobuhito Takahashi, Fuji, Japan, assignors to Kohjin Co., Ltd., Tokyo, Japan
No Drawing. Filed Apr. 11, 1972, Ser. No. 243,450
Claims priority, application Japan, Apr. 12, 1971, 46/22,355
Int. Cl. C07c *103/30*
U.S. Cl. 260—561 N **16 Claims**

A process for preparing N-alkyl acrylamides comprising reacting in a Diels-Alder reaction cyclopentadiene with a dienophile having the formula

in which R_1 and Y are defined hereinafter, to form a Diels-Alder adduct, amidating the Diels-Alder adduct to form a N-mono- or N-di-alkylamide adduct thereof, and thermally decomposing the resulting amide adduct is disclosed.

3,813,439
PROCESS FOR PREPARATION OF TRIAMINO-GUANIDINE AND ITS SALTS
Jean P. Picard, Morristown, Daniel R. Satriana, Verona, and Frank J. Masuelli, Dover, N.J., assignors to the United States of America as represented by the Secretary of the Army
No Drawing. Filed June 13, 1961, Ser. No. 116,885
Int. Cl. C07c *133/10*
U.S. Cl. 260—564 F **7 Claims**

1. A process for the preparation of triaminoguanidine derivatives comprising treating a hydrazine compounded with a material selected from the group consisting of a triaminoguanidine nitrate, a hydrochloride, a perchlorate, a picrate, a halide in an aqueous solution with calcium cyanamide, precipitating the calcium by the addition of ammonium carbonate monohydrate, and removing the calcium precipitate by filtration to obtain the triaminoguanidine derivative.

7. A process of preparing triaminoguanidine free base comprising treating a hydrazine compounded with a material selected from a group, consisting of a triaminoguanidine nitrate, a hydrogen chloride, a perchlorate, a picrate, and a halide in an aqueous solution with calcium cyanamide, precipitating the calcium by the addition of ammonium carbonate, monohydrate, neutralizing the filtrate with sodium hydroxide, adding dimethyl formamide to precipitate triaminoguanidine free base crystals, and separating the crystals from the solution.

3,813,440
OXIME CARBAMATE EXERTING A PESTICIDAL ACTION
Giuseppe Losco, Antonino Reggio, Giannantonio Michieli, and Angelo Longoni, Milan, Italy, assignors to Montedison S.p.A., Milan, Italy
Filed Dec. 1, 1971, Ser. No. 203,539
Claims priority, application Italy, Dec. 4, 1970, 32,639/70
Int. Cl. C07c *119/00*
U.S. Cl. 260—566 AC **1 Claim**

5,5-dimethyl - 1,2,3 - cyclohexanetrione-tri-(N-methylcarbamoyloxime), a new composition of matter, is useful as a pesticide. It is prepared by reacting 1,2,3-cyclohexanetrione-trioxime with methylisocyanate. Compositions containing this compound in admixture with other pesticides have been found to exert a synergistic pesticidal effect.

3,813,441

PROCESS FOR THE CONTINUOUS PREPARATION OF QUATERNARY AMMONIUM COMPOUNDS

Gunther Müller-Schiedmayer, Burghausen (Salzach), Heinz Müller and Herbert Hubner, Burgkirchen (Alz), and Klaus Ulm, Burghausen (Salzach), Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Feb. 19, 1970, Ser. No. 12,846
Claims priority, application Germany, Feb. 25, 1969, P 19 09 275.2
Int. Cl. C07c *87/30*
U.S. Cl. 260—567.6 9 Claims

Quaternary ammonium chlorides of amines having at least one long aliphatic chain are obtained by reacting continuously said amines with methyl chloride in the presence of an alkali metal hydroxide as acid-binding agent while maintaining a methyl chloride partial pressure of about 3 to 10 atmg., using a reaction medium consisting of final product and a lower alkanol.

3,813,442

11-SUBSTITUTED-DESA-ANDROSTANES

Milan Radoje Uskokovic, Montclair, and Thomas Henry Williams, Cedar Grove, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Application June 17, 1968, Ser. No. 737,279, now abandoned, which is a division of application Ser. No. 499,044, Oct. 20, 1965, now Patent No. 3,574,761, which in turn is a continuation-in-part of application Ser. No. 400,206, Sept. 29, 1964, now Patent No. 3,412,107, dated Nov. 19, 1968. Divided and this application May 14, 1971, Ser. No. 143,597
Int. Cl. C07c *49/48*
U.S. Cl. 260—586 H 2 Claims

This invention is directed to 11-substituted-desA-androstanes and derivatives thereof which are useful as intermediates in the synthesis of known 9β,10α-sterodis of the androstane series. The latter compounds can be utilized as both anabolic and anti-androgenic agents.

3,813,443

BOLL WEEVIL SEX ATTRACTANT

Richard C. Gueldner, Starkville, James H. Tumlinson III, West Point, and Dicky D. Hardee, Paul A. Hedin, and Alonzo C. Thompson, Starkville, and James P. Minyard, State College, Miss., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Original application Nov. 18, 1970, Ser. No. 90,794. Divided and this application Apr. 27, 1972, Ser. No. 248,185
Int. Cl. C07c *49/45*
U.S. Cl. 260—586 R 1 Claim

Synthetic routes to each of four critical components of the boll weevil sex attractant complex are described. Effective mixtures of the several components equal to or better than the natural attractant are disclosed.

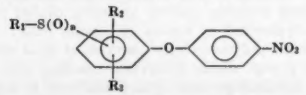
3,813,444

p-NITRODIPHENYL ETHERS

Yasunori Abe, Omiya, Nobuo Yamane, Ageo, Kensaku Itoh, Yono, Shuichi Ishida, Omiya, and Hisabumi Kobayashi, Yono, Japan, assignors to Nippon Kayaku Co., Ltd., Tokyo, Japan

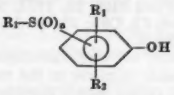
No Drawing. Filed May 13, 1971, Ser. No. 143,187
Claims priority, application Japan, June 22, 1970, 45/53,520
Int. Cl. C07c *147/06*
U.S. Cl. 260—607 A 3 Claims

New compounds having the general formula



(I)

wherein R_1 represents a lower alkyl or allyl radical, R_2 represents a hydrogen or chlorine atom or a methyl radical, R_3 represents a hydrogen or chlorine atom, R_2 and R_3 may be identical or different and n is 0, 1 or 2; said compounds are manufactured by condensing phenol compounds having the general formula



(II)

(wherein R_1, R_2 and R_3 have the same meanings as mentioned above and n is 0, 1 or 2,) with p-chloronitrobenzene in the presence of an acid binding agent. Said new compounds have a selective and lasting herbicidal effect.

3,813,445

PREPARATION OF DIHYDROXYBIPHENYLS

Stephen N. Massie, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of abandoned application Ser. No. 857,555, Sept. 12, 1969. This application Oct. 3, 1972, Ser. No. 294,721
Int. Cl. C07c *39/12*
U.S. Cl. 260—620 7 Claims

Dihydroxy-substituted biphenyls are synthesized by treating phenol with a stable acidic catalyst at elevated temperatures.

3,813,446

PRODUCTION OF TRIFLUOROMETHYLNITROPHENOLS AND RELATED COMPOUNDS

Richard L. Jacobs, Perrysburg, Ohio, assignor to The Sherwin-Williams Company, Cleveland, Ohio

No Drawing. Filed June 24, 1968, Ser. No. 739,143
Int. Cl. C07c *79/24*
U.S. Cl. 260—622 R 8 Claims

A method of making trifluoromethylnitrophenols, chloronitrophenols and related compounds which consists of reacting certain halonitrobenzotrifluorides with at least an equimolar amount of an alkali metal or alkaline earth metal thiocyanate, sulfhydrate, or hydroxide and carrying out the reaction in the presence of a solvent medium such as dimethylsulfoxide, dimethylformamide or dimethylacetamide.

3,813,447

HYDROPHILIC SYNTHETIC HIGH POLYMERS FOR SOFT CONTACT LENSES AND A PROCESS FOR MANUFACTURING THE SAME

Kyoichi Tanaka, Takeshi Mio, and Toyoyasu Tanaka, Nagoya, Japan, assignors to Toyo Contact Lens Company, Limited, Nagoya, Japan

No Drawing. Filed Sept. 15, 1971, Ser. No. 180,849
Claims priority, application Japan, Sept. 19, 1970, 45/82,164
Int. Cl. C08f *15/40*
U.S. Cl. 260—63 UY 6 Claims

A hydrophilic synthetic high polymer having an excellent workability and especially sutiable for the preparation of soft contact lenses, artificial corneas, and optical lenses for medical use, and a process for manufacturing the same essentially comprising the steps of preparing a solution by either mixing a 2-hydroxyethyl methacrylate monomer, a vinyl acetate monomer and a cross-linking monomer, or mixing a 2-hydroxyethyl methacrylate monomer, a vinyl acetate monomer and a cross-linking monomer, an N-(1,1-dimethyl-3-oxobutyl) acrylamide, adding a catalyst or initiator for polymerization to said solution, injecting said solution into a mold, heating said mold for co-polymerization of said solution, and cooling the copolymer thus produced for subsequent removal from said mold. As an alternative, the step of adding a catalyst or initiator for polymerization may be eliminated, and the process may, in this case, include exposing a solution containing mold to Co rays before heating it for co-polymerization of the solution.

3,813,448
NUCLEAR CHLORINATION OF ALKYL SUBSTITUTED AROMATIC COMPOUNDS
Stephen N. Massie, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Filed Mar. 20, 1972, Ser. No. 236,335
Int. Cl. C07c *25/04, 25/22*
U.S. Cl. 260—650 R 9 Claims

The chlorination of alkyl-substituted aromatic compounds can be made selective to the nuclear chlorination of the compound rather than a side chain chlorination by effecting the chlorination reaction in the presence of a vanadium or molybdenum-containing compound.

3,813,449
PROCESS FOR THE PREPARATION OF FLUOROCARBON WAXES
Robert Hartwimmer and Eduard Weiss, Burghausen, Salzach, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Filed July 20, 1972, Ser. No. 273,508
Claims priority, application Germany, July 22, 1971, P 21 36 639.2
Int. Cl. C07c *19/08*
U.S. Cl. 260—653.1 R 4 Claims

The present invention relates to a process for the preparation of low molecular weight fluorocarbon waxes by thermal cracking of polytetrafluoroethylene or copolymers of tetrafluorethylene and higher perfluoro-olefins at elevated temperatures and pressures under the simultaneous influence of shearing and friction forces.

3,813,450
PREPARATION OF GERANYL COMPOUNDS
Ted Symon, Lombard, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Filed Feb. 11, 1972, Ser. No. 225,672
Int. Cl. C07c *21/02*
U.S. Cl. 260—654 R 7 Claims

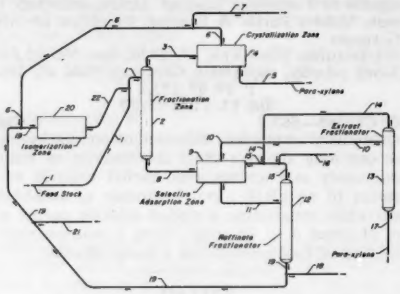
Geranyl compounds are prepared by telomerizing a prenyl compound and isoprene in the presence of a solid metal oxide catalyst.

3,813,451
PROCESS FOR ALKYLATION OF AROMATIC COMPOUNDS
Robert C. Canfield, Alvin, Thomas E. Neta, Houston, and Robert F. Wiesenborn, Alvin, Tex., assignors to Monsanto Company, St. Louis, Mo.
Filed Jan. 16, 1973, Ser. No. 324,014
Int. Cl. C07c *3/54*
U.S. Cl. 260—671 P 10 Claims

A process for the preparation of monoalkylated aromatic compounds which comprises passing an alkylatable aromatic compound and an olefinic hydrocarbon through a reaction zone under alkylating conditions while maintaining said reactants substantially completely in the liquid phase and employing liquid reactants as a quenching medium for temperature control. If any unreactive diluent is present in the reaction mixture or quenching medium the mole ratio of the olefinic hydrocarbon to such inert hydrocarbon diluent is maintained at least about five to one. The process is particularly applicable to the preparation of cumene from benzene and propylene over a solid phosphoric acid catalyst.

3,813,452
PROCESS FOR SEPARATING PARA-XYLENE
Herbert J. Bieser, Des Plaines, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Oct. 20, 1972, Ser. No. 299,570
Int. Cl. C07c *7/02, 15/08*
U.S. Cl. 260—674 SA 7 Claims

High purity para-xylene is recovered and produced in high yields from feed streams containing C_8 aromatic and C_8 nonaromatic hydrocarbons. Removing the nonaromatic C_8 hydrocarbons along with some para-xylene in a fractionation zone allows the use in an adsorption zone of an easily available inexpensive desorbent boiling in about the range of some of the nonaromatic C_8 hydrocarbons. Loss of para-xylene from the process is minimized by directing the fractionation zone overhead to a crystallizer for recovery of the para-xylene. Para-xylene deficient streams can be directed to a xylene isomerization zone for the production of additional para-xylene.



3,813,453
PREPARATION OF 1-BUTENE
Lawson G. Wideman, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
No Drawing. Filed Oct. 2, 1972, Ser. No. 294,146
Int. Cl. C07c *3/10*
U.S. Cl. 260—683.15 D 3 Claims

Ethylene is dimerized to butene-1 by using a catalyst prepared by reacting tungsten hexachloride or tungsten hexabromide with aniline or an alkyl substituted aniline and then adding an alkyl aluminum halide.

3,813,454
FLAME-RETARDANT POLYESTERS
Charles V. Juelke, Morristown, and Louis E. Trapasso, Watchung, N.J., assignors to Celanese Corporation, New York, N.Y.
No Drawing. Continuation of application Ser. No. 54,010, July 10, 1970. This application May 22, 1972, Ser. No. 255,865
Int. Cl. C09k *3/28*
U.S. Cl. 260—873 1 Claim

Fibers and other shaped structures of polyesters such as polyethylene terephthalate are rendered flame-retardant by the incorporation of polyvinyl diphenyl phosphine oxide.

3,813,455
PROCESS FOR INCREASING MOLECULAR WEIGHT OF LIVE POLYMERS
William M. Saltman and Melvin Auerbach, Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
No Drawing. Filed Oct. 2, 1972, Ser. No. 294,413
Int. Cl. C08d *5/04*
U.S. Cl. 260—879 9 Claims

A method of increasing the molecular weight and the molecular weight distribution of homopolymers of conjugated diolefins and aromatic olefins and copolymers of conjugated diolefins and/or aromatic olefins which have been polymerized by means of lithium based catalysts in which each polymer chain contains at least one terminal lithium group which comprises reacting such polymers with a hexahalogenated cyclopentadiene at temperatures from about 0° C. to about 100° C. whereby the polymer chains are extended.

3,813,456

PROCESS FOR PREPARING AMINO-SUBSTITUTED PHOSPHONATES

Al F. Kerst, Littleton, Colo., assignor to The Gates Rubber Company, Denver, Colo.

No Drawing. Filed Jan. 17, 1972, Ser. No. 218,513
Int. Cl. C07f 9/40
U.S. Cl. 260—968 5 Claims

A process is described for the preparation of amino-substituted phosphonates from their corresponding cyano-substituted phosphonate precursors, the process comprising hydrogenating the cyano-substituted phosphonates in the conjoint presence of ammonia and rhodium catalyst at a temperature from about —20° C. to about 200° C. and at superatmospheric pressure.

The compounds have antibacterial, antifungal and anti-algal activity. They also have utility as phytotoxic materials and impart flame retardancy to certain of their co-condensation products, among other useful applications.

3,813,457

PREPARATION OF N-UNSUBSTITUTED (THIONO)-(THIOL)-PHOSPHORIC(PHOSPHONIC) ACID O-ESTER MONO-AMIDES

Reimer Colln, Wuppertal-Elberfeld, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed July 10, 1972, Ser. No. 270,390
Claims priority, application Germany, July 15, 1971, P 21 35 349.1
Int. Cl. C07f 9/24
U.S. Cl. 260—971 10 Claims

A process for the preparation of an N-unsubstituted phosphoric or phosphonic acid O-ester mono-amide, or the corresponding thiono, thiol or thionothiol O-ester mono-amide, which comprises contacting at a temperature of about —10 to 70° C. the corresponding N-unsubstituted phosphoric or phosphonic acid diamide with at least an equivalent amount of an alcohol in the presence of an approximately equivalent amount of a strong mineral acid.

The strong acid preferably is hydrogen chloride which may be added by bubbling in or by dropwise addition in a diluent which may comprise excess alcohol. The initial diamide may be used in unpurified form in admixture with ammonium chloride as obtained by reaction of the corresponding dihalide with ammonia. In contrast with substituted amide starting materials the reaction is extremely selective toward producing the O-ester mono-amide substantially free of O,O-diester. The products exhibit insecticidal and acaricidal activity and can also be used to synthesize other insecticides and acaricides.

3,813,458

RANDOM ORIENTATION OF STAPLE IN SLURRY-CAST PROPELLANTS

Ronald L. Simmons, Cumberland, Md., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed June 5, 1968, Ser. No. 736,930
Int. Cl. C06b 21/02
U.S. Cl. 264—3 C 11 Claims

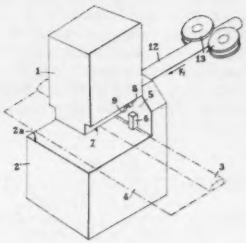
A method for randomly orienting metallic staple in solid propellants prepared by slurry casting is provided. The metallic staple is randomized by casting powder granules which form a part of the slurry. The casting powder granules are added in a sufficient quantity to form interstices between the casting powder granules. The staple is trapped in these interstices during mixing and thereby randomly oriented.

3,813,459

PROCESS FOR MAKING THE STOPS OF A SLIDE FASTENER

Marcel Potin, Choisy-le-Roi, France, assignor to Societe Financiere Francaise de Licences et Brevets, Choisy-le-Roi, France

Original application Aug. 4, 1970, Ser. No. 60,891. Divided and this application Oct. 25, 1972, Ser. No. 300,448
Claims priority, application France, Aug. 7, 1969, 6927109; June 1, 1970, 7019985
Int. Cl. B29d 5/00
U.S. Cl. 264—23 5 Claims



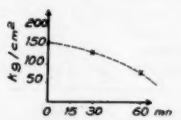
The invention provides a process for making the stops at the ends of the rows of interlocking units in a slide fastener by moulding these stops from thermoplastic material directly on to the ends of the rows of the interlocking units, the operation being performed by positioning the corresponding row of interlocking units between two complementary parts forming a stamp and a block and by also placing between these two parts a fragment of thermoplastic material obtained by cutting it from the end of a continuous strip of such material which is moved forward in jerks, the fragment being moulded by subjecting it to the effect of heat, for example by transmitting ultrasonic vibrations to it while it is held between the two parts which form the stamp and the block and, after joining, leave between them a die cavity in the shape of the stop which is to be made.

3,813,460

MANUFACTURE OF CONCRETES AND MORTARS

Andre Tardieu, Puymoyen, 16 La Couronne, France

Filed Feb. 9, 1972, Ser. No. 224,842
Claims priority, application France, Feb. 15, 1971, 7105870; Dec. 20, 1971, 7145764
Int. Cl. B28b 1/00
U.S. Cl. 264—28 5 Claims

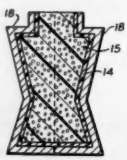


This invention relates to manufacturing concretes or mortars and is concerned with the problem of storage or transportation of materials of this kind which are made up from a binder, aggregate and water. In accordance with the invention, the mixture of the aforementioned materials in a pasty state is frozen and, after transportation or appropriate length of storage, is thawed out to reconvert the mixture into a pasty state for use.

3,813,461
PROCESS FOR PRODUCING POROUS ARTICLES OF POLYTETRAFLUOROETHYLENE
Naohiro Murayama, Takayuki Katto, and Shinichiro Funabashi, Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan
No Drawing. Filed Feb. 3, 1972, Ser. No. 223,300
Claims priority, application Japan, Feb. 3, 1971, 46/3,937; Nov. 10, 1971, 46/89,084
Int. Cl. B29c *5/00*
U.S. Cl. 264—41 27 Claims

A porous article of polytetrafluoroethylene having fine open cells and having high strength and pliability is produced by stretching a sheet of polytetrafluoroethylene at least biaxially. A porous film of polytetrafluoroethylene having especially large gas-permeability is obtained by performing the above stretching in a liquid, such as carbon tetrachloride or methanol, which is a non-solvent for polytetrafluoroethylene and is capable of wetting polytetrafluoroethylene or penetrating into the fine pores formed in the sheet during stretching. The product finds a wide range of applications including filters for strongly corrosive gases or diaphragms for separating isotopes or uranium concentration.

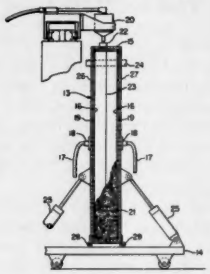
3,813,462
PROCESS FOR THE MANUFACTURE OF MOLDED ARTICLES
Arthur H. Roberts, 12 Lynnwood Drive, Westbury, N.Y. 11590
Division of application Ser. No. 760,415, Sept. 18, 1968, which is a division of application Ser. No. 523,778, Jan. 28, 1966, now Patent No. 3,419,455, which is a continuation-in-part of applications Ser. No. 455,764, May 14, 1965, now Patent No. 3,405,026, and Ser. No. 475,989, July 30, 1965, now Patent No. 3,414,456, the latter two being continuations-in-part of abandoned application Ser. No. 22,002, Apr. 13, 1960. Divided and this application May 10, 1971, Ser. No. 141,481
The portion of the term of the patent subsequent to Oct. 7, 1985, has been disclaimed
Int. Cl. B29d *27/00*
U.S. Cl. 264—45 23 Claims



Process for preparing rigid, impact-resistant article comprising a hollow outer shell component and an inner rigidifier component comprising a cellular plastic material. The article is formed by preparing separately (1) a premolded skin from a pliable plastic material, and (2) a plastic composition having foaming capability. The plastic composition is poured or sprayed into a premolded shell component and foams in place inside the cavity of the shell component. The resulting cellular structure is solidified and becomes rigid. The article is recovered.

3,813,463
METHOD OF MOLDING EMBOSSED FOAMED POLYMETHANE LAMINATES
Marvin T. Conger, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Original application Sept. 23, 1968, Ser. No. 761,451, now Patent No. 3,630,819. Divided and this application July 29, 1971, Ser. No. 167,192
Int. Cl. B29d *27/04*
U.S. Cl. 264—45 1 Claim

This invention relates to the preparation of laminates useful as building boards or panels by forming a foam within a mold which has decorative films releasably adhered to the mold surface where the foam material is a rigid polyurethane which has substantial impact resistance.



3,813,464
METHOD OF DISSOLVING SPENT NUCLEAR FUEL
Arnold L. Ayers, Convent Station, N.J., assignor to Allied Chemical Corporation, New York, N.Y.
Application Sept. 4, 1968, Ser. No. 777,933, which is a continuation-in-part of abandoned application Ser. No. 718,175, Apr. 2, 1968. Divided and this application June 28, 1971, Ser. No. 157,597
Int. Cl. C01g *43/00*
U.S. Cl. 423—20 12 Claims

A novel process for the dissolution of spent nuclear reactor fuel, while simultaneously controlling the amount of volatile off-gases evolved during the dissolution, comprises the steps of (a) passing spent nuclear reactor fuel, in regulated amounts, through a dissolvent solution, (b) continuously withdrawing the volatile off-gases which are evolved, (c) withdrawing a portion of the solution of spent nuclear reactor fuel when a predetermined maximum concentration of fuel values is reached in the solution, (d) adding a compensating volume of dissolvent solution while step (c) is being carried out, (e) continuously recirculating the remaining portion of the solution of spent nuclear reactor fuel to the dissolution step, (f) discontinuing steps (c) and (d) when a predetermined minimum concentration of fuel values is reached in the solution, and (g) repeating steps (c)–(f) as the predetermined maximum and minimum fuel values are repeatedly obtained in the solution. In a preferred mode of operation two dissolver systems are employed and fuel to be dissolved is fed to one dissolver system while the other dissolver system is being washed, discharged and readied for another dissolution cycle.

3,813,465
CYTOLOGICAL PRESERVATIVE AND MUCOLYTIC COMPOSITION
Irwin S. Lerner, 341 Shore Road, Greenwich, Conn. 06830, and Joann R. Walla, Fairfax, Conn.; said Walla assignor to said Irwin S. Lerner
No Drawing. Filed Dec. 16, 1971, Ser. No. 208,960
Int. Cl. G01n *1/00, 1/30*
U.S. Cl. 424—3 14 Claims

Cytological specimens are preserved and the mucus therein is liquefied by treatment with a composition comprising an isotonic lithium chloride solution buffered at a

physiologic pH and a cell preserving material such as formalin and thymal.

3,813,466
WOUND DRESSINGS
Robert J. Anderson, Bloomfield, N.J., assignor to Parachem Corporation, Palisades Park, N.J.
No Drawing. Continuation-in-part of applications Ser. No. 337,709, Jan. 8, 1964, now Patent No. 3,328,259, and Ser. No. 782,515, Dec. 23, 1958, now abandoned. This application May 31, 1967, Ser. No. 642,294
Int. Cl. A61l *15/03, 15/04*
U.S. Cl. 424—28 **7 Claims**

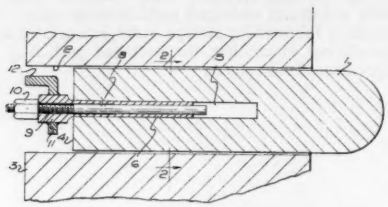
The invention comprises a laminated dressing for a wound comprising a primary layer which is readily soluble in plasma and a secondary layer in face adhering contact with the primary layer, also soluble in plasma but to a lesser extent than the primary layer.

3,813,467
METHOD OF PACKING FRESH PORK CARCASSES
Albert Sterling Drain, Phoenix, Ariz., assignor to Armour and Company, Chicago, Ill.
No Drawing. Filed Nov. 26, 1971, Ser. No. 202,584
Int. Cl. A22c *18/00;* **B65b** *25/06*
U.S. Cl. 426—393 **11 Claims**

A method of packing pork to preserve it against bacterial spoilage during extended storage periods during which time the pork may be shipped to distant places. Pork carcasses, including halves and quarter carcasses, are placed with their skins intact into an envelope of heat shrinkable film, a vacuum drawn, and the carcass encased in the film envelope subjected to heat sufficient to shrink the film and to kill undesired bacteria on the skin. This treatment is followed by storage under refrigerated conditions during which time the packaged pork may be transported to distant places.

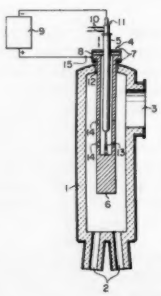
ELECTRICAL

3,813,468
ELECTRODES FOR GLASS FURNACES
Gordon Brian Shaw, Sheffield, England, assignor to Pickford Holland & Company Limited, Sheffield, England
Filed May 30, 1973, Ser. No. 365,290
Claims priority, application Great Britain, June 11, 1972, 27775/72
Int. Cl. C03b *5/02*
U.S. Cl. 13—6 **11 Claims**



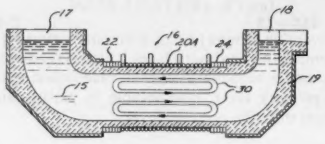
A ceramic electrode for glass furnaces comprises an electrode body having one or more longitudinal holes there being inserted in the or each hole expandable tube means formed from electrically conductive material there being further means passing along the expandable tube capable of movement relative to the tube to effect expansion of the tube whereby the tube is brought into intimate contact with the electrode, said tube and said movable means extending out of the electrode to means capable of effecting the relative movement, the tube being connected to a source of electrical power.

3,813,469
METHOD FOR HEATING VACUUM DEGASSING CONTAINER
Isamu Eguchi, Nagoya, and Susumu Hiratake, Kasugai, both of Japan, assignors to Daido Seiko Kabushiki Kaisha, Nagoya-shi, Japan
Filed Apr. 9, 1973, Ser. No. 348,893
Int. Cl. H05b *7/18*
U.S. Cl. 13—9 **3 Claims**



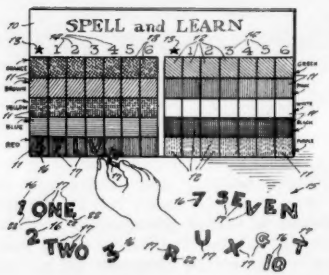
A method for heating a vacuum degassing container, disposing a plasma torch and an anode in a vacuum degassing container and using plasma jet or plasma arc produced between the torch and the anode as a heat source.

3,813,470
HORIZONTAL CORELESS INDUCTION FURNACES
William J. Duca, Warren, Ohio, assignor to Ajax Magnethermic Corporation, Warren, Ohio
Filed Apr. 30, 1973, Ser. No. 355,647
Int. Cl. F27d *11/06*; H05b *5/14*
U.S. Cl. 13—29 **4 Claims**



There is disclosed herein a horizontal coreless induction furnace having a polyphase coil that is electrically energized to establish a unidirectional stirring motion within the horizontally disposed corelss melt section of the furnace to prevent or reduce the build up of nonmetallics within the power coil surrounded portion of the furnace.

3,813,471
SPELL AND LEARN EDUCATIONAL TOY
Clarence T. Dean, III, P.O. Box 732, Cambridge, Md. 21613
Filed Feb. 26, 1973, Ser. No. 335,938
Int. Cl. G09b *1/04*
U.S. Cl. 35—35 H **1 Claim**

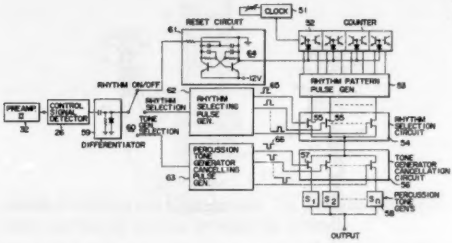


A toy for small children, and which is educational so that the children can learn to spell words and know the alphabet, numbers and colors; the toy consisting of a spelling board divided into ten spelling sections, each of which is of different color, and the toy also including three sets of digits for placement on the spelling sections; one set of digits comprising numbers, another comprising an alphabet set and a third comprising alphabetic letters that spell out colors.

3,813,472
ELECTRONIC MUSICAL INSTRUMENT WITH RHYTHM SELECTION PULSE GENERATOR
Katsuhiko Hirano, Shizuoka, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan
Filed Aug. 17, 1972, Ser. No. 281,561
Claims priority, application Japan, Aug. 20, 1971, 46-62980
Int. Cl. G10h *1/00*
U.S. Cl. 84—1.03 **1 Claim**

An electronic musical instrument for automatically changing tone colors of musical sounds comprises a plurality of tone color formation circuits for providing different tone colors to

a tone signal selectively derived from tone generators in response to operation of a keyboard and a switch circuit having switching elements for receiving the differently tone-colored signals respectively. The switch elements are rendered conductive to pass the tone signals therethrough in a preselected order in response to control signals which are recorded on one channel of a two-channel recording medium such as a stereophonic disk or tape. The other channel of the



recording medium is recorded with musican information adapted to accompany a melody performance to be carried out by a player with the electronic musical instrument. The control signals are recorded on the recording medium at so proper positions thereof that musical sounds being produced by the electronic musical instrument are caused to be varied at proper points of time in conformity with melody and accompaniment performances. The control signals may be utilized to control rhythm section sounds in various ways.

3,813,473

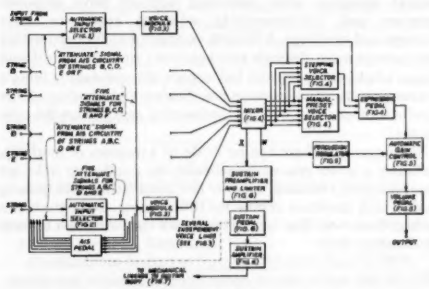
ELECTRIC GUITAR SYSTEM

Paul Francis Terymenko, Oshawa, Ontario, Canada, assignor to 254803 Investments Limited, Toronto, Ontario, Canada

Filed Oct. 27, 1972, Ser. No. 301,372

Int. Cl. G10h *3/00*

U.S. Cl. 84—1.16 **7 Claims**


AUTOMATIC INPUT SELECTOR
VOICE MODULE
"ATTENUATE" SIGNAL FROM A/B CIRCUITRY OF STRINGS B,C,D, E ONLY
FIVE "ATTENUATE" SIGNALS FOR STRINGS B,C,D, E AND F
"ATTENUATE" SIGNAL FROM A/B CIRCUITRY OF STRINGS A,B,C, D ONLY
FIVE "ATTENUATE" SIGNALS FOR STRINGS A,B,C, D AND E
MIXER
SUSTAIN PREAMPLIFIER AND LIMITER
SUSTAIN PEDAL
SUSTAIN AMPLIFIER
OUTPUT

An electric guitar having a plurality of strings and including circuitry for adjustably attenuating the input signals from the strings not played, circuitry for adjustably varying the attack of the output signals representing notes and chords, gain control circuitry utilizing a photoconductor, and a mechanically coupled feedback path for applying output signals back to the strings to sustain vibrations.

3,813,474

ELECTRONIC MUSICAL INSTRUMENT CIRCUIT

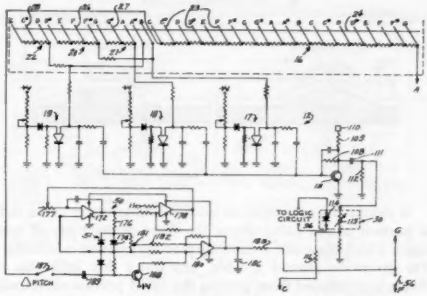
Anthony C. Ippolito, North Tonawanda, N.Y., assignor to The Wurlitzer Company, Chicago, Ill.

Filed Aug. 25, 1972, Ser. No. 283,832

Int. Cl. G10h *1/02*

U.S. Cl. 84—1.17 **6 Claims**

A key actuated electronic musical instrument of the type suitable for use with piano or organ keyboards, or the like, has a single relaxation oscillator circuit for producing melody tones from selected keys of a keyboard, and three relaxation oscillator circuits for producing chord tones from other selected keys of the keyboard. A delta pitch circuit which produces a sawtooth-like output signal is coupled to one of the inputs of the single oscillator to provide a rapidly changing sound going from a flat tone to a natural tone. The signals for producing melody sounds are delivered through a selective filter circuit which will selectively simulate the sounds of, for example, a saxophone, brass, horn, or a string instrument. The sound signal from the filter circuit is then delivered to an



audio amplifier and loud-speaker system. The three oscillator signals for producing chord sounds are mixed together in a transistor buffer stage and then delivered to the audio amplifier through a gate circuit formed by a light-emitting diode and a light-dependent resistor. The gate circuit is responsive to an automatic rhythm generator so that chord sounds may have a selected rhythm. Also connected to the audio amplifier is the automatic rhythm sound generator which can play one of several rhythms utilizing desired percussion sounds. An adjustable vibrato circuit is connected to the melody oscillator to produce a pulsating sound that can be varied in frequency.

3,813,475

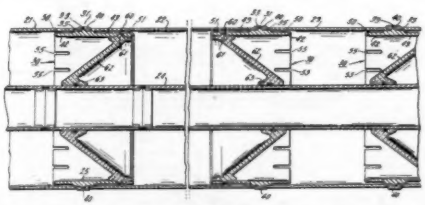
GROUNDED GAS INSULATED BUS ENCLOSURE-COMBINED ENCLOSURE JOINT BACKUP RING AND CONTAMINATION CONTROL DEVICE

John C. Cronin, 403 Georgetown, Greensburg, Pa. 15601

Filed May 21, 1973, Ser. No. 362,534

Int. Cl. H01b *9/06*

U.S. Cl. 174—21 C **9 Claims**



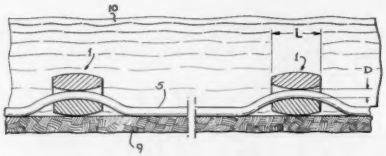
Gas (SF_6) insulated bus systems having an outer grounded housing and an axial conductor wherein the outer housing section ends are supported in butt relation on an inner ring which also serves to position the insulator that supports the axial conductor; a butt weld may be formed between the housing ends over the ring. The butt weld and ring obviate the need for a friction fit of the housing ends within each other thereby reducing the scraping which creates impurities. The inner ring may have cylindrical extensions on each side spaced slightly from the inner wall of the housing to provide a tap which will receive and retain impurities that are created during construction or that may arise later — thereby reducing contamination of the insulating gas.

3,813,476

UNDERWATER OIL-FILLED ELECTRICAL CABLE INSTALLATION WITH MEANS LOCALLY SUPPORTING THE CABLE ABOVE THE BED OF THE WATER

Paolo Gazzana Priaroggia, Milan, Italy, assignor to Industrie Pirelli Societa per Azioni, Milan, Italy

Filed June 18, 1973, Ser. No. 371,119
Claims priority, application Italy, July 3, 1972, 26534/72
Int. Cl. H02g 9/02
U.S. Cl. 174—37 3 Claims



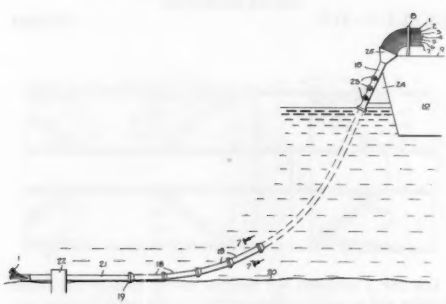
A device for encircling an oil-filled underwater cable to lift a portion of the cable above the floor of the body of water upon which the cable is laid. By placing a device according to the invention around a cable, any water that infiltrates the cable is precluded from passing the lifted portion surrounded by the device. A plurality of devices of the invention at spaced locations along a cable will localize the damage due to water penetration to the cable section between two of the encircling devices. The device can suitably be formed of two detachably interconnected identical half-shells having convexly curved inner and outer surfaces, the joined half-shells forming a toroidal casing with a central hole for receiving the cable.

3,813,477

ELECTRIC POWER CABLE APPARATUS FOR TRANSMITTING POWER FROM A FLOATING STRUCTURE

Frank E. Fischer, Ossining, N.Y., assignor to Consolidated Edison Company of New York Inc., New York, N.Y.

Filed July 12, 1972, Ser. No. 270,957
Int. Cl. H02g 9/04
U.S. Cl. 174—70 R 15 Claims



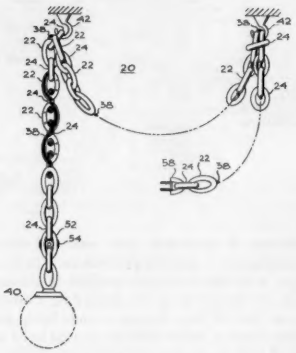
A self-contained, fluid impregnated, high voltage, electric power cable or cables extending between a fixed point underwater and a movable platform, such as the deck of a barge floating on such water, the cable or cables being surrounded by a series of interconnected rigid pipes having interconnections which permit limited tilting of the axis of one pipe with respect to the axes of the next adjacent pipes so as to avoid bending of the cable or cables which would damage the electric characteristics thereof.

3,813,478

FLEXIBLE ELECTRICALLY CONDUCTIVE CHAIN AND METHOD OF MAKING THE SAME

Gerald A. Ervin, Calabasas, Calif., assignor to Samuel W. Ford, Pacoima, Calif., a part interest

Filed Oct. 30, 1972, Ser. No. 302,259
Int. Cl. F16q 13/18; B21l 17/00
U.S. Cl. 174—70 R 10 Claims



An improved flexible electrically conductive chain is provided which comprises a plurality of spaced conductor links, each of which includes an external shell defining an enclosed internal passageway, apertures extending through the shell in communication with the passageway adjacent opposite ends of the link, and a plurality of support links. The links preferably are in the configuration of a peripheral shell with central opening, with individual support links disposed between and interconnecting adjacent conductor links through said openings. A flexible conductor is disposed within said passageways, through said apertures and external of said support links. The support links space the conductor links a distance apart which permits free flexing and bending of the conductor and chain without loadbearing or strain on the conductor.

The improved chain can be made of a number of methods, including a novel procedure wherein the conductor links are simultaneously molded around the conductor, with joining studs which maintain conductor link spacing. Such studs can be later removed. The support links are then attached to form the finished chain.

3,813,479

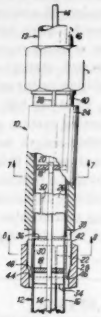
COAXIAL CABLE JOINT

Oliviero Olivero, Florence, Italy, assignor to International Standard Electric Corporation, New York, N.Y.

Filed June 14, 1973, Ser. No. 369,738
Claims priority, application Italy, June 26, 1972, 9563/72; Aug. 26, 1972, 9648/72
Int. Cl. H02g 15/08
U.S. Cl. 174—88 C 9 Claims

A joint for coaxial cables such as telephone cables which is suitable for cable transmission frequencies of 60 MHz. and high speed digital devices. The joint employs metal tubes which are externally conical in shape and are inserted in the ends of the sheaths of the cables. A connecting sleeve is coupled at its ends by terminal nuts over the metal tubes to grip the sheaths of the cables therebetween. Means are provided inside the sleeve extending between the metal tubes forming a continuous metallic cylindrical surface. The inside diameter of

the metal tubes and the diameter of the cylindrical surface within the sleeve correspond to that of the cable sheaths to



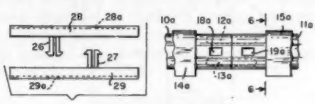
provide a constant impedance match. The joint also provides a stable mechanical junction between the cables.

3,813,480

DEVICE OF INSULATING MATERIAL HOLDING ADJACENT LENGTHS OF SEMI-RIGID ELECTRICAL CONDUCTORS JOINED

Stephen B. Sprague, 23920 Anza Ave. No. 244, Sunnyvale, Calif.

Filed May 21, 1973, Ser. No. 362,369
Int. Cl. H01r *7/02*
U.S. Cl. 174—92 **3 Claims**



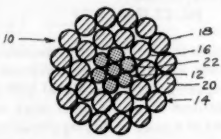
This device is provided with two parts of insulation material that are similar and are held together by pins extending through holes in the electrical conductors so that when these insulation materials are assembled with the electrical conductors said pins not only hold the insulation members on the electrical conductors but also cooperate with said members to prevent the conductors from spreading apart.

3,813,481

STEEL SUPPORTED ALUMINUM OVERHEAD CONDUCTORS

Harold W. Adams, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Continuation-in-part of Ser. No. 206,269, Dec. 9, 1971, abandoned, which is a continuation-in-part of Ser. No. 51,128, June 30, 1970, abandoned. This application Nov. 16, 1972, Ser. No. 307,076
Int. Cl. H01b *5/10*
U.S. Cl. 174—130 **23 Claims**



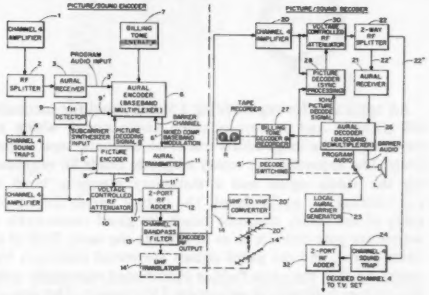
The disclosed composite conductors have a steel component for supporting the weight of the composite conductor, and an annealed aluminum component for purposes of electrical conductivity. Annealing the aluminum component gives it relatively low yield strength and relatively high elongation characteristics, and thereby improves service performance of the conductor.

3,813,482

METHOD OF AND APPARATUS FOR SCRAMBLE-ENCODED TRANSMISSION AND DECODED RECEPTION FOR OVER THE AIR AND CABLE SUBSCRIPTION TELEVISION AND THE LIKE

Isaac S. Blonder, Locust, N.J., assignor to Blonder-Tongue Laboratories Inc., Old Bridge, N.J.

Filed July 24, 1972, Ser. No. 274,199
Int. Cl. H04n *1/44*
U.S. Cl. 178—5.1 **53 Claims**



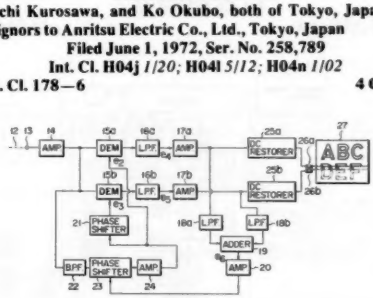
This disclosure deals with novel television or similar scrambling-decoding techniques for use in subscription television and the like (STV), involving the transmission of picture signals scrambled by repetitively depressing to blanking level a plurality of sync signals, preferably the vertical, and at about a 10 Hz rate in order to produce a shifting rolling picture, psychologically unpleasant and discomforting to the viewer, while displacing the audio program signals to a super-audible subcarrier and substituting a barker channel in the normal aural band—all without affecting the video signals; such that, upon reception, decoding and picture and sound restoration, the reception quality, even for color, remains unchanged.

3,813,483

FACSIMILE SYSTEM

Koichi Kurosawa, and Ko Okubo, both of Tokyo, Japan, assignors to Anritsu Electric Co., Ltd., Tokyo, Japan

Filed June 1, 1972, Ser. No. 258,789
Int. Cl. H04j *1/20*; H04l *5/12*; H04n *1/02*
U.S. Cl. 178—6 **4 Claims**

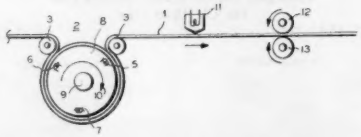


A facsimile system comprising a signal transmitting section comprising two scanners for scanning the surface of an original picture in parallel directions, a multiplex modulator for forming a composite picture signal by subjecting two carrier waves shifted 90° in phase from each other to 2-phase modulation by the picture signals obtained from said scanners; and a signal receiving section comprising a multiplex demodulator for subjecting said composite picture signal to 2-phase demodulation so as to separate it into two original picture signals and two recorders for reproducing the original picture upon receipt of the aforesaid two picture signals.

3,813,484
MAGNETIC TAPE REPRODUCING SYSTEM FOR STOP MOTION VIDEO WITH AUDIO

Mineo Mino; Kiyoji Fujisawa, and Kenzo Ianabe, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 22, 1973, Ser. No. 343,674
Int. Cl. H04n 5/78
U.S. Cl. 178—6.6 FS **7 Claims**

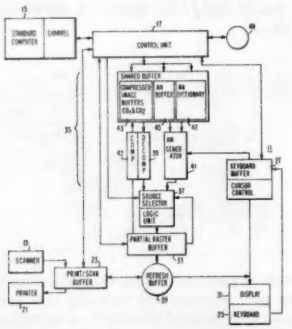


An apparatus for reproducing a video signal for successive still pictures and a corresponding audio signal, which are recorded on the longitudinal tracks on magnetic tape respectively. The apparatus has rotary magnetic heads for reproducing the video signal and a stationary magnetic head for reproducing the audio signal. The output signals from a plurality of the rotary magnetic heads are gated respectively by respective gate circuits so as to provide the same field of the video signal, and the gated signals are mixed additively by a mixer, so that the same field is reproduced repeatedly and a still picture is displayed on a color TV receiver. The gate circuits are controlled by the vertical synchronizing signal contained in the field of the video signal for each picture and by the control signal provided from a detector for detecting the phase of the rotary magnetic heads, and these signals are provided to the gate circuits through a ring counter, and further these signals are suitably delayed for controlling the gating action so as to reproduce a still picture and to change continuously to reproduce subsequent still pictures.

3,813,485
SYSTEM FOR COMPRESSION OF DIGITAL DATA

Ronald Barthold Arps, Stanford, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 5, 1972, Ser. No. 215,504
Int. Cl. H04n 7/12
U.S. Cl. 178—6.8 **18 Claims**

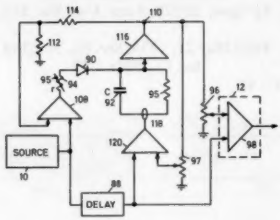


A system for compressing or compacting data that is representative of scanned images. Involved are predictive coding of two level pictorial data, followed by run-length coding characterized by an infinite overflow capability. The predictive stage utilizes an *n*th-order exhaustive, causal predictor which looks at adjacent points of previous lines and preceding points of present lines to predict what color (black or white) the predictive is. If the prediction is in error, a binary one is transmitted. Alternatively, if the prediction is correct, a binary zero is transmitted. The run-length coding is adapted to code the run-lengths of binary zero between binary one errors using a dual-base counting system, where p represents one base (the number of low order subword states) and n represents a second base (the number of high order subword states) with a subword length, L, of $\log_2 (p + n)$ bits. Mutually exclusive states in this run-length counting system provide an automatic comma for separating variable-length words (groups of subwords). A significant advantage of this type of run-length number system is that it provides a practical run-length encoding technique with the flexibility of variable-length overflow. The overall data compacting system also achieves a relatively high compression ratio for line drawings and other related type printed matter.

3,813,486
IMAGE ANALYSIS

William Ralph Knowles, Royston, England, assignor to Image Analysing Computers Limited, Royston, England

Filed Oct. 28, 1970, Ser. No. 84,721
Claims priority, application Great Britain, Oct. 31, 1969, 53405/69; Mar. 5, 1970, 10560/70
Int. Cl. H04n 5/14
U.S. Cl. 178—7.1 **3 Claims**



The invention concerns image analysis systems employing a source of scanned video signal and threshold detector means for generating a binary signal whose value depends on the fulfilment or otherwise of the detection criterion. Means are provided for accumulating at least the low frequency content of the video signal and deriving therefrom a correcting voltage for application to the detector means to reduce variations between the peak value of the video signal corresponding to the background of the image and the threshold level of said detector means.

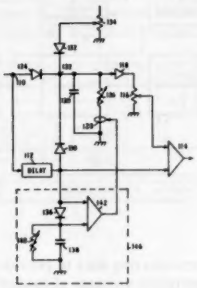
3,813,487
DETECTION DEVICES FOR IMAGE ANALYSIS SYSTEMS

Michael John Cowham, Sawston, and David Edward Wadlow, Royston, both of England, assignors to Image Analysing Computers Limited, Royston, England

Filed Feb. 17, 1972, Ser. No. 227,160
Claims priority, application Great Britain, Feb. 25, 1971, 5390/71; Dec. 16, 1971, 58584/71
Int. Cl. H04n 5/21
U.S. Cl. 178—7.1 **13 Claims**

Circuit modifications to a known detection device by which video signal amplitude excursions are converted into a two value signal by comparing the video signal with a reference voltage, which is derived from the local peak value of the video signal by means of a peak rectifying circuit comprising a rectifying diode and capacitor. One aspect of the invention provides a HOLD-discharge circuit which normally prevents the capacitor voltage of the peak rectifying circuit from decaying, a subsidiary peak rectifying circuit having an adjustable discharge rate (preferably set to the maximum shading rate) and a voltage comparator for comparing the am-

plitude excursions with the subsidiary peak rectifying circuit capacitor voltage to produce a switching pulse whevever the latter decays below the instantaneous video signal amplitude video signal to operate the HOLD-discharge circuit into a discharge state for the duration of the switching pulse. The capacitor voltage of the first peak rectifying circuit can either serve as a reference voltage for a voltage comparator forming the video signal detector or a gain control voltage for a variable-gain amplifier controlling the amplification of the video signal.



A second aspect provides a voltage clamping circuit to prevent the capacitor voltage of the peak rectifying circuit of the known detection device or a voltage derived therefrom from dropping below a value equivalent to the maximum shading level voltage. The second aspect may be employed independently of the first aspect.

3,813,488

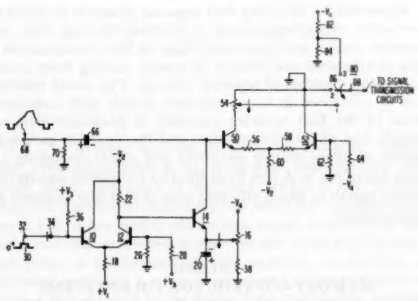
VIDEO STRIPPER

John Dill Cavett, Pennsauken, and Robert Sherman Hopkins, Jr., Hightstown, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 8, 1973, Ser. No. 339,192

Int. Cl. H04n *5/16, 5/38, 7/18*

U.S. Cl. 178—7.1 **4 Claims**



This disclosure describes a circuit which is gated to amplify the video portion of a television signal to the exclusion of its synchronizing components, and which permits the amplitude adjusted, the gated signal to be adjusted, yet without altering the value of its black level.

3,813,489

LOW LIGHT TELEVISION CAMERA

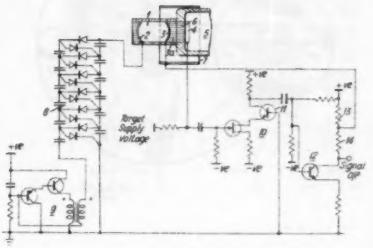
Melvin Murray Ramsay, Broxbourne; William Geddes Barnes, and Michael Albert Bedgood, both of Harlow, all of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 3, 1972, Ser. No. 303,554

Claims priority, application Great Britain, Nov. 23, 1971, 54291/71

Int. Cl. H04n *5/34*

U.S. Cl. 178—7.2 **3 Claims**



The phosphor screen of an image intensifier fiber-optically coupled to the target of a television camera tube is connected to a point in the video amplifier which provides a signal to decouple the target from ground. The phosphor acts as a guard ring to avoid capacitive effects. The feedback signal from the amplifier is equal in magnitude and phase to the voltage signal produced at the target. An added guard ring may be connected to the same potential as the phosphor.

3,813,490

COLOUR TELEVISION CAMERAS

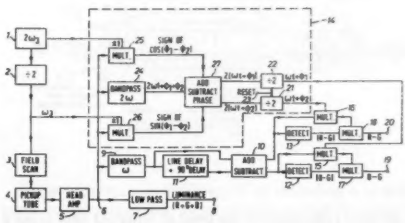
Ian MacDonald Green, Buckie, Scotland, assignor to EMI Limited, Hayes, Middlesex, England

Filed Oct. 4, 1972, Ser. No. 294,806

Claims priority, application Great Britain, Oct. 8, 1971, 46846/71

Int. Cl. H04n *9/06*

U.S. Cl. 178—5.4 ST **11 Claims**

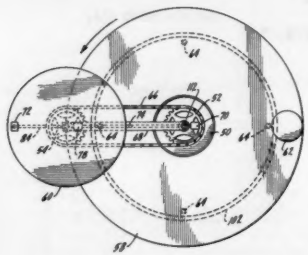


A colour television camera is disclosed which includes a pickup tube and a filter arrangement, disposed in the path of incident light to the tube, for analysing a viewed scene into three primary colours. The filter arrangement is such that video signals are derived from the tube in the form of two carrier waves which are respectively amplitude modulated by signals indicative of the differences in intensity between light of different pairs of said primary colours. A circuit arrangement is provided for processing said video signals to provide signals similar to those which are derived from a standard three-tube camera.

3,813,491
MEANS FOR MOVING A TELEVISION SCREEN

Leonard J. Pennar, 3623 W. Cermak Rd., Chicago, Ill. 60623

Filed Sept. 21, 1972, Ser. No. 290,788
Int. Cl. H04n 5/64, 5/655
U.S. Cl. 178—7.81 11 Claims

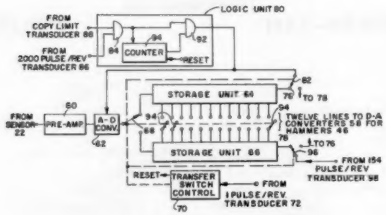


A transporting device for periodically moving a television screen over a prescribed path while presenting the viewing surface to the observer thereby providing relief of eyestrain.

3,813,492
COPIER SYSTEM

John T. Potter, Locust Valley, N.Y., assignor to Potter Instrument Company Inc., Plainview, N.Y.

Continuation-in-part of Ser. No. 136,950, April 23, 1971. This application May 25, 1972, Ser. No. 256,965
Int. Cl. H04l 15/34
U.S. Cl. 178—30 15 Claims

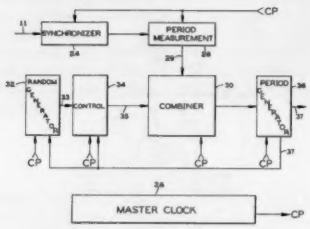


An element responsive to the level of reflected light scans a document in consecutive parallel scan lines, producing an electrical output signal which is converted from analog to digital form. The digital output is entered into one of a pair of storage resistors. A copy of the document is produced by a multi-hammer helix printer which composes one line of dots at-a-time by printing plural line segments simultaneously. The hammers are energized so as to press against the helical bar in accordance with the outputs of corresponding digital-to-analog converters connected respectively to parallel output lines from the storage registers. A transfer switch control causes one register to be in the output mode operating the hammers while the other is in the input mode for serial data entry, and vice versa on alternate scan lines.

3,813,493
SECURE DATA TRANSMISSION APPARATUS

Patrick A. Hughes, 3750 N.W. 11th St., Pompano Beach, Fla. 33063, and David S. Russell, 891 N.W. 49th Ave., Fort Lauderdale, Fla. 33313

Filed Dec. 7, 1972, Ser. No. 313,149
Int. Cl. H04n 1/44; H04k 1/02
U.S. Cl. 179—1.5 S 6 Claims

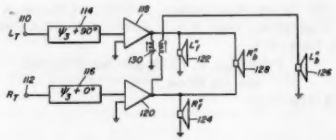


Apparatus for enciphering data to provide secure transmission including generating a stream of random signals for combining with the data to provide scrambled data signals. An intermediate sequence is provided to limit the magnitude of the change between successive random signals.

3,813,494
QUADRAPHONIC REPRODUCING SYSTEM

Benjamin B. Bauer, Stamford, Conn., assignor to Columbia Broadcasting Systems, Inc., New York, N.Y.

Division of Ser. No. 44,224, June 8, 1970, abandoned. This application Sept. 30, 1971, Ser. No. 185,050
Int. Cl. G10k 11/00; G11b 3/74
U.S. Cl. 179—1 GQ 8 Claims



Apparatus for decoding four separate channels of sound information transduced from a medium having only two separate tracks and presenting them on four loudspeakers to give the listener the illusion of sound coming from a corresponding number of separate sources. The sound information is contained in two composite signals each containing three of the four separate channels in predetermined amplitude and phase relationships, and the decoder includes a matrix of phase-shifting networks and signal-combining circuits operative to derive from the two composite signals four output signals in which different ones of said four channels are predominant.

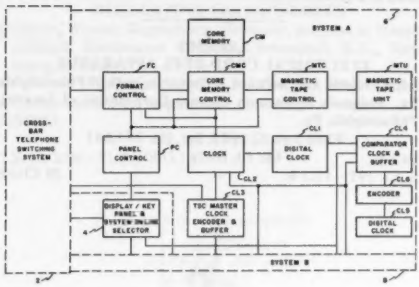
3,813,495
MEMORY CONTROL FOR TOLL SYSTEMS

Howard Jeffery Conerly, Milan, Tenn., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 11, 1972, Ser. No. 313,674
Int. Cl. H04m 15/06
U.S. Cl. 179—7 MM 7 Claims

A control system for recording toll information is disclosed for use with automatic toll systems for station-to-station

telephone calls. The control system employs electronic logic circuits which, in response to signals generated in other components of the system, enable records to be made in the core



memory relating to billing data including the identity of the calling party and the time during which a call is established. The core memory empties into a tape memory periodically after the recorded data has been checked for accuracy.

3,813,496

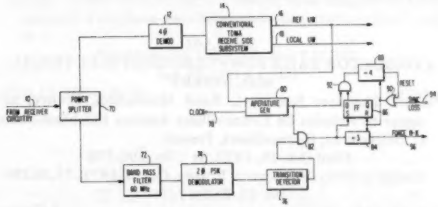
TDMA BURSTS ACQUISITION SYSTEM

Wilfrid G. Maillet, Gaithersburg, Md., assignor to Communications Satellite Corporation, Washington, D.C.

Filed Oct. 2, 1972, Ser. No. 293,905

Int. Cl. H04j 3/06

U.S. Cl. 179—15 BS **9 Claims**



In a time division multiple access communication system, burst time acquisition is accomplished automatically and rapidly taking advantage of the known range to the satellite. When the transmitter is turned on or when burst synchronization is lost, a low power acquisition signal, occurring at the frame rate and controlled in time by the burst synchronizer start pulse, is transmitted. At the receiver, an aperture is generated providing a window occupying all or a portion of the time slot assigned to the burst of the station. The acquisition signal is caused to precess across the entire frame until the acquisition signal is received during the generation of said window. When the latter occurs the start time is set back a number of bit positions corresponding to the amount of precession of the acquisition signal during a round trip delay time from the station to the repeater and back to the station. The normal burst transmission resumes thereafter.

3,813,497

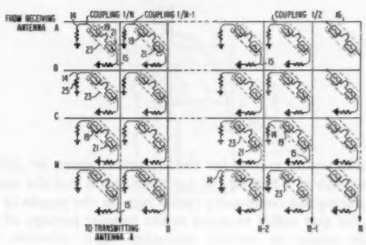
MICROWAVE MULTIPLEX SWITCH

Marvin Richard Wachs, Rockville, and Arnold Berman, Kensington, both of Md., assignors to Communications Satellite Corporation, Washinton, D.C.

Filed Apr. 12, 1972, Ser. No. 243,330

Int. Cl. H04j 3/00

U.S. Cl. 179—18 GF **9 Claims**



N x N microwave multiplex switch matrix for use on multitransponder satellites. Incoming signals on any of the N input conductors can be selectively channeled to any of the N output conductors through single pole-single throw switching elements. Cascaded directional couplets are utilized in an equal power splitter arrangement to transfer equal portions of the incoming signals to each of the output conductors.

3,813,498

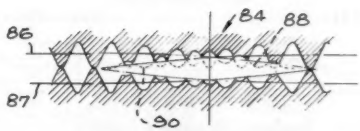
MUSICAL RECORDING WITH RE-ENTRY TRACK

Carl S. Nelson, Jr., Los Angeles, Calif., assignor to Opsonar Organ Corporation, Bronx, N.Y.

Filed Nov. 17, 1971, Ser. No. 199,476

Int. Cl. G11b 7/00; G10h 3/06

U.S. Cl. 179—100.3 R **4 Claims**

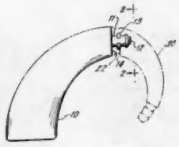


An improvement in the method of recording a closed-loop track on an optical disc music record, so that the joint where the head and tail ends of the recording meet will create a minimum of objectionable effects when the record is played. The recording of the track is extended over slightly more than one revolution of the record to produce a joint region on the record where the head and tail ends of the recording overlap. The musical or other information signals delivered to the recording head, and the bias signal (which determines the width of the track when there is no information signal) delivered to the head, are both gradually increased over several cycles of the music signal at the head end and gradually decreased over several cycles of the music signal at the tail end to provide a smoother transition where the head and tail ends overlap.

3,813,499
HEARING AID NOZZLE WITH RESILIENT BAYONET LOCK

Walter R. Vignini, Peekskill, N.Y., assignor to Sonotone Corporation, Elmsford, N.Y.

Filed Nov. 8, 1972, Ser. No. 304,847
Int. Cl. H04v *25/02*
U.S. Cl. 179—107 H **8 Claims**

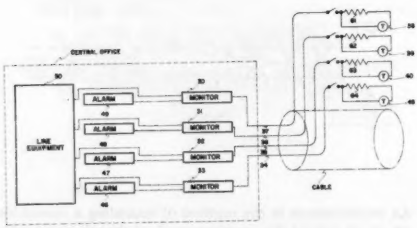


Interconnecting means for the transition piece or auricle mounting unit of a behind-the-ear hearing aid and the nozzle of the hearing aid comprising radial lugs on the nozzle of the hearing aid and radial recesses in the tubular passage of the transition piece or auricle mounting unit wherein the elastomeric construction of the auricle mounting unit permits a relatively low application force to apply the auricle mounting unit to the nozzle of the hearing aid and interengage the radial lugs of the nozzle with the recesses of the passage in the auricle mounting unit while nevertheless a higher retention force is achieved requiring a greater force to remove the auricle mounting unit thereby providing protection against accidental separation of the nozzle and while nevertheless providing protection against accidental misuse by permitting the elastomeric auricle mounting unit to deform and slip off the lugs in the case of application of force in excess of a predetermined force.

3,813,500
ALARM SYSTEM UTILIZING TELEPHONE TALKING PAIRS

Walter L. Roberts, Hickory, N.C., assignor to Superior Continental Corporation, Hickory, N.C.

Continuation-in-part of Ser. No. 815,321, April 11, 1969. This application Feb. 18, 1970, Ser. No. 12,240
Int. Cl. H04m *3/08*
U.S. Cl. 179—175.2 C **18 Claims**

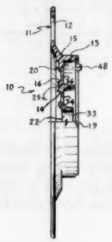


Disclosed herein is a fail-safe alarm system virtually transparent to a telephone subscriber circuit. The alarm system is adapted for use with a telephone transmission pair (electrical conductors) in conjunction with any vending machine or a pay-station telephone and is employed to detect not only the attempted vandalism of the coin box, its location, but also a filled coin box as well. Normally closed contacts of a switch device in a vending machine or telephone paystation coupled with a "high-value" resistor make up a leakage path, and current flowing through this leakage path also flows through a "low-value" resistor. This resistor is a basic part of an alarm circuit, the alarm circuitry bridging the talking pair. The resulting voltage drop across this last-mentioned resistor is used to reverse bias a transistor in the alarm circuit, thereby keeping an alarm from sounding. Coin box vandalism and/or a filled coin box causes the contacts of a switch device to open, thereby removing the leakage path ("high-value") resistor from the alarm circuitry. This electrical condition causes the alarm circuitry to conduct thereby causing an alarm to be activated at a central office.

3,813,501
ELECTRICAL CORD-REEL APPARATUS

Adolph Meletti, and Bernard J. Tamarin, both of Philadelphia, Pa., assignors to Vacuum Cleaner Corporation of America, Philadelphia, Pa.

Filed Apr. 6, 1972, Ser. No. 241,641
Int. Cl. H02g *11/00*
U.S. Cl. 191—12.2 R **20 Claims**

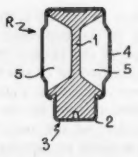


Retractable electrical cord-reel apparatus is provided with a pair of hub-and-flange members secured together in sheave-like configuration to accommodate an electrical cord wrapped therearound. The ends of a pair of electrical conductors in the cord terminate within the hub after passage through a gap therein and are secured against lengthwise withdrawal by frictional engagement in serpentine configuration about a plurality of bosses upstanding on the back of one of the hub-and-flange members whose opposite face carries ringlike electrical conductors communicating with the ends of the cord conductors via intervening openings through the member.

3,813,502
CONDUCTOR RAILS FOR ENERGISING ELECTRICAL MACHINERY

Patrick Theodore Bommart, Rueil Malmaison, France, assignor to Acieries De Gennevilliers Anciens Etablissements C. Deleachaux, Gennevilliers, France

Filed Oct. 10, 1972, Ser. No. 296,378
Claims priority, application France, Oct. 8, 1971, 71.36256
Int. Cl. B60m *1/34*
U.S. Cl. 191—30 **8 Claims**



A conductor rail assembly for high speed tracked vehicles includes an I-section aluminium rail core, the lower flange carrying a U-section stainless steel sheath for contact by a current-collecting shoe. The remainder of the core is protected by an insulating sheath which is spaced from the vertical web of the core to provide spaces within which fishplates can be located. An inverted J insulating support carries the rail by

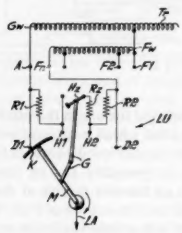
means of a resilient claw. The base of the support is connected to a bracket secured to track sleepers, the connection between support and bracket enabling vertical and lateral adjustment.

3,813,503

TRANSFER SWITCH FOR TAP-CHANGING REGULATING TRANSFORMERS

Wolfgang Breuer, Regensburg, Germany, assignor to Maschinenfabrik Reinhausen Gebruder Scheubeck K.G., Regensburg, Germany

Filed Jan. 15, 1973, Ser. No. 323,560
Claims priority, application Germany, Feb. 3, 1972, 2204983
Int. Cl. G05f 1/14
U.S. Cl. 200—11 TC 6 Claims



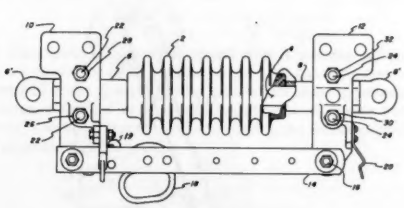
A so-called Jansen type transfer switch for regulating transformers is provided with an additional resistor and additional switching means rendered operative and inoperative, respectively, at predetermined points of time during a tap-changing operation for improving the L/R ratio during the particular tap-changing operation, and thus rendering less onerous the switching duty which the auxiliary contacts or arcing contacts of the transfer switch have to perform.

3,813,504

HIGH VOLTAGE IN-LINE DISCONNECT SWITCH

Ronald Vernon Anderson, St. Charles, Mo., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jan. 30, 1973, Ser. No. 327,987
Int. Cl. H01h 31/00
U.S. Cl. 200—48 R 6 Claims



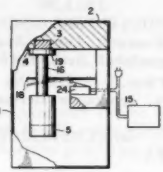
A switch is provided for insertion directly into a high voltage power line to provide means for electrically disconnecting an extension of the line. The switch employs an insulator having high tensile strength and a high dielectric constant which can physically support a power line and also withstand the electrical forces applied through the line. The electrical circuits are either completed or broken through action of a switch blade which can conduct electric current between hardware components connected to end fittings on the insulator. The end fittings are tapered and faced by steps to prevent their being pulled from the hardware or rotated with respect to the hardware.

3,813,505

SENSING DEVICE OF ACCELERATION AND VIBRATION

Akira Shoji, Tokyo, Japan, assignor to Toyo Automation Co., Ltd., Tokyo, Japan

Filed Sept. 18, 1972, Ser. No. 289,838
Claims priority, application Japan, Oct. 11, 1971, 46-80020; Oct. 25, 1971, 46-84478; Nov. 9, 1971, 46-89214
Int. Cl. H01h 35/14
U.S. Cl. 200—61.45 R 12 Claims



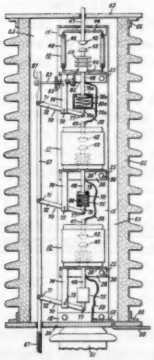
The acceleration and vibration sensing device of the present invention comprises in a casing a sensor means consisting of a cylindrical weight and a holding member attracting thereunder the sensor means by magnetic force. The sensor means detects external acceleration and vibration such as of an earthquake and permits the cylindrical weight to drop at a predetermined level of acceleration and vibration. This dropping motion is transmitted to an operating means connected to the sensor casing to actuate the valves or cocks, or electrical switches or air-operated microswitches either to open or close so as to avoid the danger caused from vibration of an earthquake or like accident. The sensing device can be provided so as to measure the gradient of inclination, as well as acceleration and vibration of the intensity as predetermined.

3,813,506

VACUUM-TYPE CIRCUIT BREAKER WITH IMPROVED ABILITY TO INTERRUPT CAPACITANCE CURRENTS

Graham R. Mitchell, Willingboro, N.J., assignor to General Electric Company, Philadelphia, Pa.

Filed Apr. 12, 1973, Ser. No. 350,419
Int. Cl. H01h 33/66
U.S. Cl. 200—144 B 11 Claims



A multi-break vacuum circuit breaker comprises a plurality of vacuum-type circuit interrupters electrically connected in

series. Closing of the circuit breaker is controlled in such a manner that any prestriking that occurs during closing consistently occurs across the contacts of a preselected one or two of the interrupters and not across the contacts of the remaining interrupters, which constitute a majority of the total number of interrupters. This maintains the contacts of the remaining interrupters in good condition for a subsequent opening operation, thereby improving the ability of the circuit breaker to interrupt capacitance currents on such an opening operation.

3,813,507

SYNCHRONOUS PUFFER CIRCUIT BREAKER

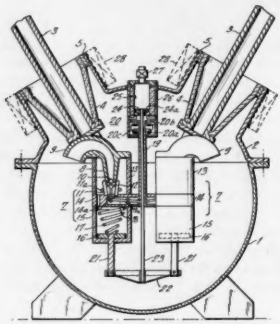
Fritz Kesselring, Kusnacht, Zurich, Switzerland, assignor to Siemens Aktiengesellshaft, Berlin and Munich, Germany

Filed Sept. 5, 1972, Ser. No. 286,033

Claims priority, application Germany, Sept. 6, 1971, 2145071

Int. Cl. H01h *33/70*

U.S. Cl. 200—148 A **6 Claims**



A high-voltage circuit breaker contains synchronously operated contacts which are opened just prior to current zero. The contacts are contained within a gas-filled vessel and one of the contacts is a nozzle contact. Gas flows through the nozzle contact prior to contact operation, due to the relative movement of a piston and cylinder. The synchronous operating circuit is further constructed to reclose the contacts if current continues to flow between the contacts after they open.

3,813,508

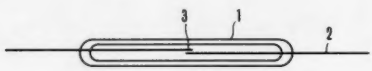
REED SWITCHES

Yokokawa Toshiki, and Chihiro Kawakita, both of Tokyo, Japan, assignors to OKI Electric Industry Co., Ltd., Tokyo, Japan

Filed Jan. 26, 1973, Ser. No. 327,098

Int. Cl. H01h *1/02*

U.S. Cl. 200—268 **2 Claims**



The cooperating contacts of a reed switch are made of rhodium oxide. Such contacts are prepared by plating rhodium on the reeds of reed switches and then oxidizing the surface layers of the plated rhodium contacts by heating them in an oxygen containing atmosphere at a temperature of from 380° to 580° C for 3 to 15 minutes.

3,813,509

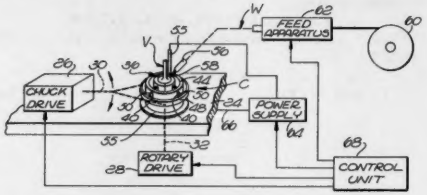
SYSTEM FOR INTERNAL-COMBUSTION ENGINE VALVE PRODUCTION

Marion D. Woods, and Albert J. Zvanut, both of Whittier, Calif., assignors to Stoody Company, Whittier, Calif.

Continuation-in-part of Ser. No. 295,751, Oct. 6, 1972, Pat. No. 3,743,815. This application July 2, 1973, Ser. No. 376,060

Int. Cl. B23k *9/04*

U.S. Cl. 219—76 **7 Claims**



A system is disclosed for use in the production of valves that include a disk or head which is integral with an axially-extending shank or stem. As disclosed herein, a form or blank of such a valve initially is provided (as by various metal-forming techniques) with an annular groove at the peripheral edge of the head. The valve form is then placed in a chuck to provide electrical contact with substantially the entire periphery of the valve head thereby affording a locus of short paths for heat flow and an arc-welding electrical current. In accordance herewith, the valve is then rotated in relation to an arc-welding apparatus to deposit an annulus of a specific form of hard metal in the groove of the valve. Finally, the valve is finished by smoothing the deposited annulus to provide a seating surface that will matingly engage an engine port to accomplish closure.

3,813,510

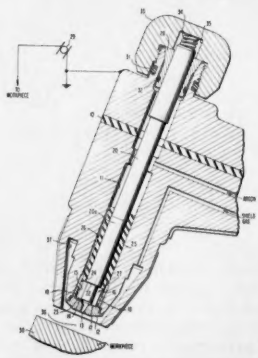
ELECTRIC ARC TORCHES

Bruce O. Hatch, Lebanon, N.H., assignor to Thermal Dynamics Corporation, W. Lebanon, N.H.

Continuation-in-part of Ser. No. 223,717, Feb. 4, 1972. This application Oct. 30, 1972, Ser. No. 302,123

Int. Cl. B23k *9/00*

U.S. Cl. 219—121 P **5 Claims**

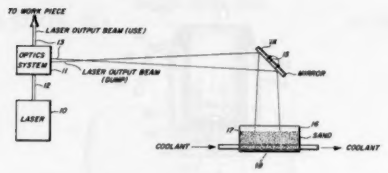


This is an improvement to electric arc torch of the type producing plasma flames for cutting, welding, and other high temperature applications. The nozzle assembly of the torch provides close control of gas supplied to the electrode in a strong vortex to stabilize and enhance the directivity of the arc column.

3,813,511
METHOD OF AND APPARATUS FOR ABSORBING HIGH POWER LASER ENERGY

John V. Staal, Needham, Mass., assignor to AVCO Everett Research Laboratory Inc., Everett, Mass.

Filed Feb. 21, 1973, Ser. No. 334,402
Int. Cl. B23k 27/00
U.S. Cl. 219—121 LM 12 Claims

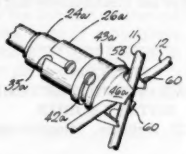


A method of and apparatus for receiving and absorbing high power laser energy comprising a bed of comminuted material having a high melting point, such as sand or comminuted granular refractory material that will function as an inert diffuse scatterer of an incident laser beam, and laser beam mirror means for directing a preferably defocused laser beam onto the bed of comminuted material. Where it does not inherently or otherwise exist, the laser beam is defocused to the extent that the intensity of the beam (power/unit area) leaving the mirror means and impinging on the bed of material is sufficiently low as to not sufficiently change the surface characteristic of the bed of material away from being an inert diffuse scatterer of the laser beam incident on it.

3,813,512
WELDING TIP ASSEMBLY

Alfred A. Nordgren, Holland, Mich., assignor to New York Wire Mills Corporation, Tonawanda, N.Y.

Filed Jan. 2, 1970, Ser. No. 114
Int. Cl. B23k 9/00
U.S. Cl. 219—158 8 Claims



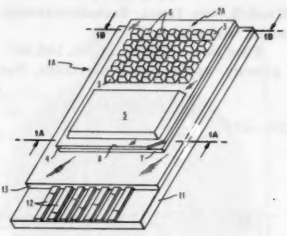
A work-holding canopy mounted over a welding tip and comprising a hood having one or more work-receiving jaws or grooves in it, the grooves having sides which taper together at the bottom thereof so as to cam together work pieces held therein. The hood also functions to confine the welding sparks and gases to the work area.

3,813,513
THERMAL PRINTING DEVICE

Madhukar B. Vora, Beacon, and Leon L. Wu, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 16, 1973, Ser. No. 341,830
Int. Cl. H05b 1/00
U.S. Cl. 219—216 16 Claims

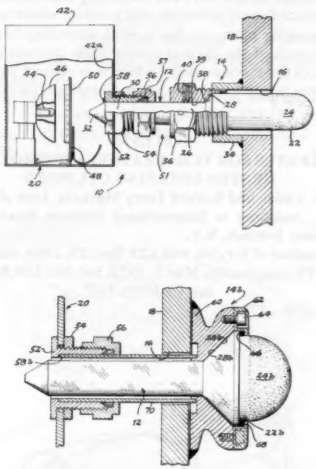
A thermal printing device having an array of semiconductor heating elements forming character matrixes on selective heating of the elements for transfer of informational display to heat sensitive papers. The thermal printing displays are fabricated by standard integrated techniques into a structure in which the heating of the elements, in the array, is constrained to portions thereof which are to be disposed adjacent the heat sensitive medium on which the character is formed. Since the heating elements are formed by conventional integrated circuit techniques, they can be formed in a single wafer into which can also be concurrently integrated the necessary drive and character generating circuits.



3,813,514
LIGHT PIPING UNIT FOR SUPPLYING RADIANT ENERGY TO THE INTERIOR OF A PRESSURE VESSEL

John M. Canty, 117 Cornwell Ave., Tonawanda, N.Y. 14150

Filed Oct. 16, 1972, Ser. No. 297,801
Int. Cl. H05b 1/00; G02b 5/14
U.S. Cl. 219—354 13 Claims

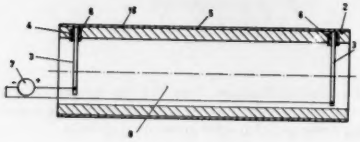


A light piping unit for use in supplying radiant energy to the interior of a pressure vessel having an internal operating pressure differing from ambient pressure external to the vessel. The unit includes an elongated optical light pipe formed intermediate its ends with an integral frusto-conically shaped mounting surface. The light pipe extends through an aperture in the wall of the pressure vessel with the mounting surface thereof in fluid sealed engagement with a cooperating frusto-conically shaped mounting surface defined in a mounting fixture attached to the vessel. The mounting surfaces of the light pipe and fixture are maintained in pressure-fluid sealing engagement with each other by the difference between the vessel operating and the ambient pressures acting on the inner and outer ends of the light pipe. A radiant energy source is accurately supported in proximity to an essentially conically shaped outer end of the light pipe either directly by the light pipe or by the mounting fixture.

3,813,515
APPARATUS WITH BUILT-IN THERMO-COUPLE FOR MEASURING AND CONTROLLING THE TEMPERATURE OF A BODY

Cornelis Hendrik Van Toorn, Bennebroekerdijk 213, Haarlemmermeer, Netherlands

Filed Nov. 9, 1971, Ser. No. 196,897
Claims priority, application Netherlands, Nov. 10, 1970, 7016462
Int. Cl. H05b 1/02
U.S. Cl. 219—471 6 Claims

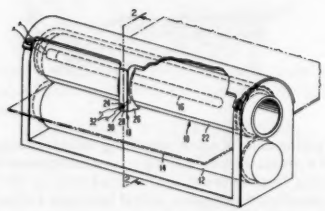


Apparatus embodies a carrier and is adapted to measure and control the temperature of said carrier at least a portion of which is covered with a metallic coating thereon and provided with means for measuring the temperature of said coating with the aid of at least one thermo-couple, in which each thermo-couple lead of different materials is passed, electrically insulated through the carrier, each lead being interconnected at its end to spaced apart points on said coating, whereby that part of the gauging plane on the coating extending between the junction ends of the thermo-couple leads constitutes the hot junction of the thermo-couple which is in contact with the surface whose temperature may be monitored and/or controlled.

3,813,516
APPARATUS FOR TEMPERATURE CONTROL FOR A HEATED ROTATING CYLINDER

Bader S. Kudsi, and Ballard Terry Mahurin, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 888,625, Dec. 29, 1969, abandoned.
This application May 5, 1972, Ser. No. 250,838
Int. Cl. H05b 3/02
U.S. Cl. 219—471 5 Claims

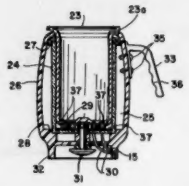


Apparatus for controlling the surface temperature of a heated roll which, in conjunction with a backup roll, is utilized to feed sheets for fixing tones images, for example, a heat sensing device such as a thermistor is positioned within the thermal boundary layer surrounding the heated roll to sense the temperature change of the air within the boundary layer adjacent the heated roll and to generate an electrical signal representative of the temperature changes. The signal is utilized in conjunction with a temperature controller to control the temperature of the heated roll so that the heat energy transferred to the paper sheet is accurately controlled.

3,813,517
BATTERY OPERATED COFFEE MAKER

Ivory McGruder, 7515 Kimbark, Chicago, Ill. 60619

Filed Jan. 4, 1973, Ser. No. 320,947
Int. Cl. F27d 11/02
U.S. Cl. 219—438 2 Claims

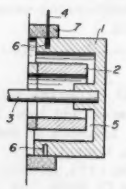


A coffee brewer and more particularly small coffee brewer pots which make use of electrical current as heat source, includes a corrosion resistant and high heat conductivity inner metal chamber and abutting against outside peripheral surface of said inner chamber is a heat insulating material with the surface abutting against said outside peripheral surface of said inner chamber coated with a heat reflecting substance; a commercially available electrical heating element with low electrical resistance wherein the absolute value of the electrical resistance being not less than one unit ohm while capable of carrying high electrical current, is positioned securely and resting on the outside bottom surface of said inner chamber while at the same time, trapped in place by the inner bottom of said insulating material with spacers. An outermost chamber encloses whole assembly, providing another heat insulating air gap and to which a convenient handle is securely attached and an integral base stand. A female receptacle on line cord to receive the male prongs of the heating element is provided together with the corresponding and separate electrical wires to which alligator clips are mechanically and electrically connected.

3,813,518
APPARATUS FOR MEASURING THE TEMPERATURE OF ROTARY BODIES

Koshei Arita, 10, 23 2-chome, Minamimagome, Ohota-ku, Tokyo, Japan

Filed Mar. 7, 1972, Ser. No. 232,554
Int. Cl. G01k 13/08; H05b 1/02
U.S. Cl. 219—471 6 Claims



In apparatus for measuring the temperature of a rotary body, a slot is formed around the periphery of the rotary body in the radial direction thereof and a temperature measuring element is positioned to ride in the slot as the body is rotated.

3,813,519

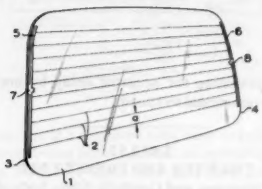
ELECTRICALLY HEATED GLASS WINDOW

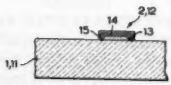
Friedrich Jochim, Herzogenrath; Dieter Peetz, Aachen; Heinz Karla, Herzogenrath, and Hermann Luerssen, Laurensberg, all of Germany, assignors to Compagnie de Saint-Gobain, Neuilly-sur-Seine, France

Continuation of Ser. No. 46,271, June 15, 1970, abandoned, Division of Ser. No. 682,173, Nov. 13, 1967, Pat. No. 3,553,833. This application Dec. 26, 1972, Ser. No. 318,115

Int. Cl. H05b 3/06

U.S. Cl. 219—522 16 Claims





An electrically heated glass window comprised of a sheet of glass plate has a one-piece electric heating grid attached to the plate glass by being fused thereto. The heating grid includes an array of generally parallel conductor strips which are interconnected at each opposite end by a pair of electrical terminal strips, and both the conductor strips and the terminal strips constitute integral parts of a one-piece, generally coplanar grid which is fused to the plate glass, as by a first layer or strata of metallic silver particles applied in a paste-like medium and subjected to fusing temperature by heating the glass.

3,813,520

ELECTRIC HEATING UNIT

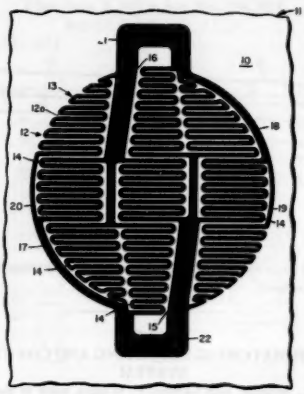
Harold A. Brouneus, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Mar. 28, 1973, Ser. No. 345,718

Int. Cl. H05b 3/16

U.S. Cl. 219—543 4 Claims

An electric heating unit including a flat, smooth sheet or plate of a glassy material on the upper surface of which vessels are to be placed for heating or cooking purposes. A portion of the plate is selected as a heating portion and the lower surface of the selected portion is divided into a plurality of selected areas of generally equal areal expanse. There is bonded to or deposited on the surface of each selected area a sinuous or undulate pattern or strip of a thin film electrical resistance heating material having a linear positive temperature coefficient of electrical resistance, such strips being generally equal to each other in width and length to provide the strips with generally equal electrical resistances. A plurality of additional strips of the resistance material are also deposited on or bonded to the lower surface of the burner or burner portion and selectively connect with each other and with the sinuous strips to provide electrical bus bars which electrically connect the sinuous strips in parallel or multiple with each other, such additional strips being graded in width to maintain electrical power to all



of the sinuous strips the same under normal cooking or heating conditions.

3,813,521

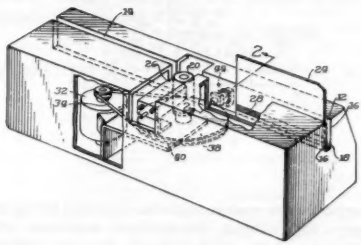
CONTROL SENSOR

Fred G. Kral, Lake Villa, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Division of Ser. No. 67,451, Aug. 27, 1970. This application Nov. 10, 1972, Ser. No. 305,405

Int. Cl. H01h 43/08; G06k 7/06, 19/02, 7/08

U.S. Cl. 235—61.11 D 4 Claims



A sensor for a machine having a control circuit actuated by use with an electrically conductive member to actuate a circuit of the machine by completing a circuit through the sensor. The sensor includes first and second conductive portions arranged for simultaneous engagement with the conductive member carried on a component introduced into the machine.

3,813,522

COUNTING SYSTEM FOR ARTICLES IN A STREAMLINED STACK

Donald Delbert McCarthy, 10156 Nottingham, Detroit, Mich. 48224

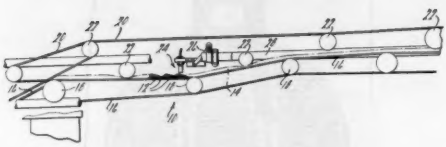
Filed Aug. 14, 1972, Ser. No. 280,641

Int. Cl. G06m 7/06

U.S. Cl. 235—98 R 8 Claims

A newspaper counting system wherein a streamlined stack of papers passes beneath a sensor, the sensor directing a jet of

air toward the stack and senses disruption of the jet each time the leading edge of a paper passes the sensor. Each disruption

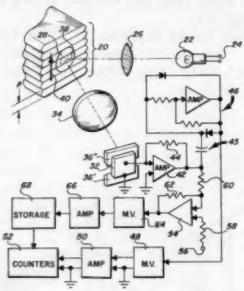


is counted to provide an accurate count of newspapers passing below the sensor.

3,813,523
PITCH MATCHING DETECTING AND COUNTING SYSTEM

William L. Mohan, and Samuel P. Willits, both of Barrington, Ill., assignors to Spartanics, Ltd., Palatine, Ill.

Continuation-in-part of Ser. No. 780,367, Dec. 2, 1968, Pat. No. 3,581,067. This application May 24, 1971, Ser. No. 146,227. The portion of the term of this patent subsequent to May 25, 1988, has been disclaimed.
Int. Cl. G06m 9/00
U.S. Cl. 235—92 SB **20 Claims**



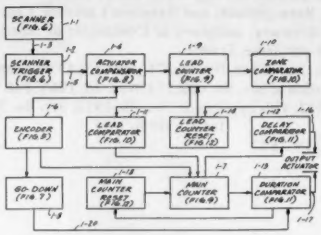
An apparatus for stacked sheet-like materials having low or ambiguous edge contrast characteristics associated with individual ones of the stacked sheets. For low reflectance materials the sensor array is used as a current generator working into a substantially zero impedance circuit to maximize bandwidth. Where ambient levels are high sensors having different spectral response characteristics are used to detect whether the sensor array is being exposed to ambient or is generating counting data. Where contrast gradients are very low logic circuitry detects the absence of missed count data and injects synthesized data in its place.

3,813,524
INDUSTRIAL MACHINE CONTROLLER

Daniel A. Coberley, Danville, Ill., assignor to Hurletron Incorporated, Danville, Ill.

Filed Nov. 24, 1971, Ser. No. 201,859
Int. Cl. G06m 7/06
U.S. Cl. 235—92 T **4 Claims**

A digital industrial control system for effecting operations on objects moving at variable speed by controlling on and off intervals of a mechanical actuator, and utilizing encoder pulses to reflect distance of movement of the objects while

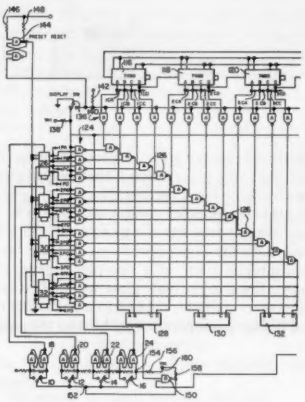


digitally compensating for actuator delay by introducing an extra count proportional to speed.

3,813,525
COUNTER AND PRESET UNIT

Richard E. Kitterman, and Grady E. Giles, both of Greenville, S.C., assignors to Hersey Products, Inc., Spartanburg, S.C.

Filed May 30, 1972, Ser. No. 257,533
Int. Cl. G06m 3/02
U.S. Cl. 235—92 PE **6 Claims**



A counting system including a solid state counter and preset unit which counts an input pulse signal and compares it in a logic gating circuit with a preset number, a display device which permits the displaying of either the preset number or the incoming count and interlocking means to prevent accidental disruption of a count sequence.

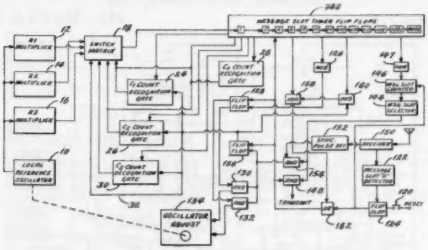
3,813,526
GAIN CHANGE CONTROL CIRCUIT FOR TIME SYNCHRONIZATION

Fred D. Watson, and John L. Mohr, both of St. Louis, Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Nov. 2, 1972, Ser. No. 303,107
Int. Cl. G01s 9/56
U.S. Cl. 235—150.23 **15 Claims**

The present gain change means represent an improvement over the time synchronization means for remotely positioned timing devices. The present improvement includes means for changing the gain so as to provide multiple correction factors in time synchronization means, and the present means have particular application where an error correction gain of less

than unity is of advantage particularly in controlling group synchronization. This is also true in situations where it is desired to improve the convergence of synchronization toward a common time base. The present means also have application to group resynchronization of members that have

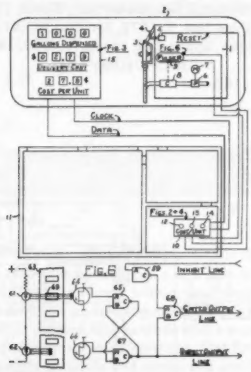


previously arrived at a common time base or index by restricting the relative timing error between cooperating members as they change from one time base to a new time base. The present means also include means to limit the maximum amount of correction applied during any one exchange of resync data.

3,813,527
LIQUID DISPENSER WITH ELECTRONIC COMPUTING AND DISPLAY SYSTEM

Earl M. Langston, Fort Wayne, Ind., assignor to Takeim Corporation, Fort Wayne, Ind.

Filed Oct. 24, 1972, Ser. No. 300,432
Int. Cl. G06f *15/56*; B67d *5/30*
U.S. Cl. 235—151.34 **20 Claims**

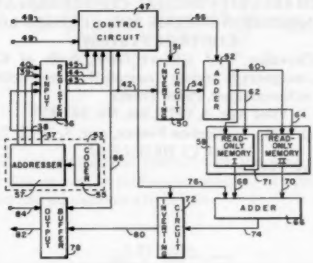


The invention relates to a computer and display system to be used for example in a gasoline dispenser in the same fashion as the conventional mechanical value register. The system is capable of electronically computing not only the amount of liquid dispensed based on a delivery pulse signal, but also the delivery cost dependent upon pre-selected cost per unit setting. This information, in the form of a seven segment display code, is multiplexed over a pair of conductors to one or more external displays or any device that can utilize the signal. The system, by the use of digital displays and electronic circuitry, will inherently round value amounts to the nearest correct unit. A modified form of the system can employ a redundancy circuit as a self-checking feature. Additionally, it can be used as a computer and display in any system involving quantitative measurements.

3,813,528
HIGH-SPEED FUNCTION GENERATOR

Curtis J. Blanding, San Jose, Calif., assignor to The Singer Company, Binghamton, N.Y.

Filed June 2, 1972, Ser. No. 258,953
Int. Cl. G06f *1/02, 15/34*
U.S. Cl. 235—152 **6 Claims**

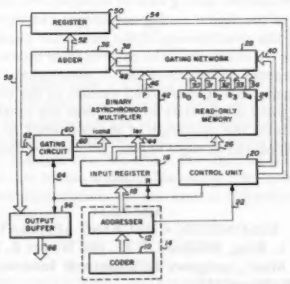


A device for generating the value of the sine and cosine functions for angles between 0° and 360° is disclosed herein. By employing the symmetrical characteristics of the sine and cosine functions, a table of values for the sine function between 0° and 90° is the extent of the memory requirements. A read-only memory is disclosed for storing the table of values, and peripheral circuitry is provided for translating from the sine to the cosine functions as well as translating to angles between 90° and 360° for both functions. Additional circuitry is disclosed for providing the resultant output value in true binary form, or two's complement form.

3,813,529
DIGITAL HIGH ORDER INTERPOLATOR

Kenneth G. Bartlett, San Jose, Calif., assignor to The Singer Company, Binghamton, N.Y.

Filed Oct. 25, 1972, Ser. No. 300,595
Int. Cl. G06f *15/34*
U.S. Cl. 235—152 **6 Claims**



A system is disclosed herein which is designed to generate the value for dependent variables of given mathematical functions when provided with corresponding independent variables as inputs thereto by computing a Taylor Series Expansion of that function. Any function for which a Taylor Series Expansion exists in the region of interest may be generated by the disclosed system. A read-only memory is disposed for storing a plurality of predetermined parameters of a Taylor Series Expansion for each function to be computed. An

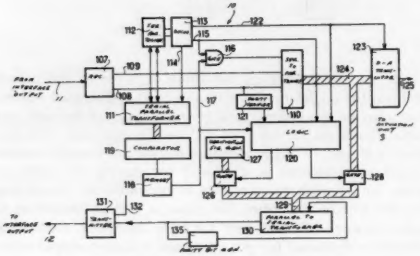
asynchronous binary product generator and a binary adder are provided, external to the read-only memory, for performing cyclic computations of the Taylor Series Expansion. A control circuit is provided for synchronizing the operation of the individual constituent circuits.

3,813,530

HIGH SECURITY DIGITAL CONVERSION AND TRANSMISSION SCHEME FOR A CLOSED LOOP CONTROL SYSTEM

Gabriel Chevalier, and Gilbert Gatel, both of Grenoble, France, assignors to Societe Generale De Constructions Electriques et Mecaniques, Paris, France

Filed Apr. 4, 1973, Ser. No. 347,837
Claims priority, application France, Apr. 5, 1972, 72.11974
Int. Cl. H03k *13/34*
U.S. Cl. 235—153 A **6 Claims**



A system of security checks is incorporated in each of a plurality of separately addressable analog-digital and digital-analog converters in a control system supervised by a computer. Each converter is normally inactive and is conditioned for operation when a coded address applied thereto by the computer coincides with a preset unique address of the converter. In the case of analog-digital converters, the computer responds to a signal indicating such conditioning by operating the then-addressed one of the conditioned converter to translate the measured analog data at its input into digital form. In the case of the digital-analog converters, the signal indication denoting the conditioning of the converter causes command data from the computer to be entered from the computer to an output register of the converter. A subsequent verification of the computer between a stored version of the command data and a replica of the data entered into the conditioned converter effects the operation of the converter to translate the data entered into its input register into analog form.

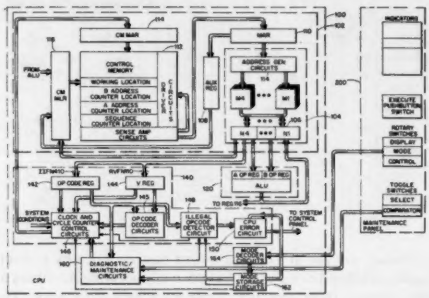
3,813,531

DIAGNOSTIC CHECKING APPARATUS

Richard L. King, Hillsboro, N.H., and Wayne R. Buzby, Marlboro, Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jan. 2, 1973, Ser. No. 320,384
Int. Cl. G06f *11/04*
U.S. Cl. 235—153 AK **21 Claims**

A data processing system incorporates diagnostic apparatus which enables service personnel to specify the type of instruction which will cause the system to halt when it starts processing that instruction. The diagnostic apparatus includes a plurality of switches which are used to set up the bit pattern of an instruction op-code specifying the type of instruction to be tested. This bit pattern is applied to a comparison circuit included within the diagnostic apparatus which compares the bit pattern with the bit pattern of each instruction op-code at a predetermined period of time as the system operates at normal processing speed. When the apparatus senses the op-code designated, it causes the system to treat the op-code as being



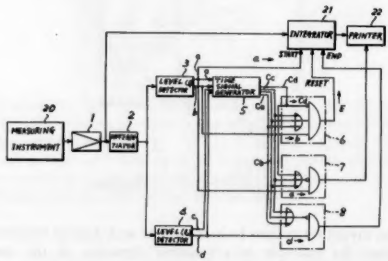
illegal and brings the system to an orderly halt and signals a program error condition. The service personnel can then use other apparatus normally included as part of the diagnostic apparatus to clear the error condition and then step through the instruction a cycle at a time examining the operation of the system in executing the instruction.

3,813,532

METHOD AND APPARATUS FOR INTEGRATING THE OUTPUT OF A MEASURING INSTRUMENT

Tatsuo Sato, and Shingo Takimoto, both of Kyoto, Japan, assignors to Shimadzu Seisakusho Ltd., Kyota, Japan

Filed Nov. 3, 1972, Ser. No. 303,417
Claims priority, application Japan, Nov. 10, 1971, 46-89647
Int. Cl. G06g *7/18*
U.S. Cl. 235—183 **14 Claims**

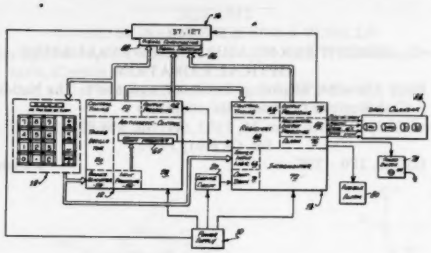


Method and apparatus for integrating the output of a measuring instrument, in which a plurality of check points of each peak in the output are detected to produce a time signal which lasts a predetermined period of time, so that if one of the check points is detected within the time period caused by the detection of the previous check point, the peak is treated as a noise peak. Whether or not a peak being detected is a noise peak superimposed on the signal peak of the measured output is determined by whether the end point or the apex of the peak exceeds a predetermined level.

3,813,533
CLOCK CALCULATOR

George W. Cone, La Jolla, and James E. Kinzie, Oceanside, both of Calif., assignors to Garrett Comtronics Corporation, San Diego, Calif.

Filed June 2, 1972, Ser. No. 259,060
Int. Cl. G04c 23/00; G06f 7/38
U.S. Cl. 235—156 48 Claims



A combined clock calculator having a calculator mode to perform and/or display arithmetic functions and results and a digital clock mode to perform and/or display time related functions.

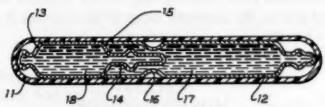
ERRATUM

For Class 235—176 see:
Patent No. 3,813,623

3,813,534
CHEMICAL LIGHTING DEVICE HAVING INTERLOCKING AMPOULES

Clarence W. Gilliam, Bloomington, Ind., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 14, 1973, Ser. No. 397,554
Int. Cl. F21v 9/16
U.S. Cl. 240—2.25 1 Claim



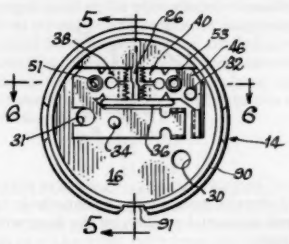
A chemical lighting device having an outer cylindrical sleeve of light transmitting material and a pair of interlocking frangible ampoules positioned within said outer cylindrical sleeve. A first ampoule containing an activator material has a reduced diameter portion that extends into a second ampoule containing a chemiluminescent material. The first ampoule is fuzed to the second ampoule and closes one end of the second ampoule. The second ampoule is provided with an indentation that surrounds the reduced diameter portion of the first ampoule so that the two ampoules can be broken simultaneously, and, upon mixing of the chemiluminescent material and the activator material, light is emitted through the outer sleeve.

3,813,535
LIGHT FIXTURE FOR VEHICLES

Jerry H. Freeman, Mount Prospect, Ill., assignor to Reflect-o-Lite Manufacturing Company, Chicago, Ill.

Filed Apr. 2, 1973, Ser. No. 346,981
Int. Cl. F21v 21/00; H01r 7/00
U.S. Cl. 240—57 6 Claims

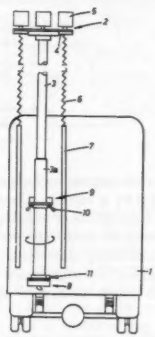
A fixture for mounting to a vehicle. A loop of a lead is pushed through an access opening, past a connector which has a flexible leg and a cutting edge at the end of the leg. When the lead loop is pulled back, the cutting edge pierces the lead insulation and makes electrical contact with the wire within the lead. The fixture may be surface mounted to an external vehicle surface and may mount a light bulb.



3,813,536
VEHICLE EQUIPPED WITH A FLOODLIGHT INSTALLATION

Helmut Kempkes, Hermann-lons-strasse 19, 563 Remscheid/Brd, Germany

Filed Jan. 2, 1973, Ser. No. 319,979
Claims priority, application Germany, June 24, 1972, 7223740
Int. Cl. F21v 21/14
U.S. Cl. 240—67 9 Claims



A vehicle equipped with a floodlight installation, in which the floodlight installation is provided with an additional attachable and detachable part on the carrier mast for the lamps and the vehicle can be maintained for its other customary functions, for example as a fire truck, fire fighting ship or as a current generator trailer while at the same time providing a useful and low cost device for the lateral alignment of the floodlight installation.

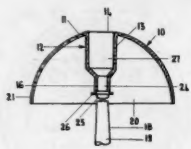
3,813,537
LAMPSHADE AND LAMP COMBINATION AND MEANS FOR JOINING ONE WITH THE OTHER

Gilbert Lieberman, 750-16th Ave., Pointe-aux-Trembles, Montreal 500, Canada

Filed Feb. 3, 1972, Ser. No. 223,132
Int. Cl. F21v 1/00
U.S. Cl. 240—108 R 3 Claims

A lampshade and lamp combination including a molded lampshade having a central recess forming a bulb housing and an electric bulb socket engaging member. The lamp includes a vertical lamp part with an electric bulb socket at its upper end.

The socket engaging member has a bearing surface which rests under the force of gravity on a circumferential portion of

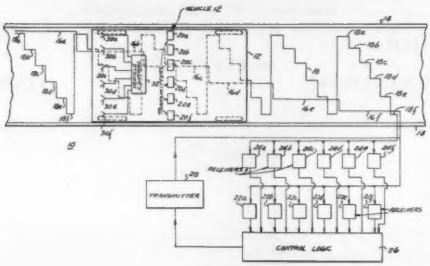


the socket thereby maintaining the lampshade in a constant vertical and horizontal position on the lamp with respect to the lamp post.

3,813,538
SYSTEM FOR AUTOMATICALLY CONTROLLING A LAND VEHICLE

George M. Thorne-Booth, Tarzana, Calif., assignor to The Bendix Corporation, Bendix Center, Southfield, Mich.

Filed Oct. 4, 1972, Ser. No. 295,089
Int. Cl. B61l *25/02*
U.S. Cl. 246—122 R **8 Claims**

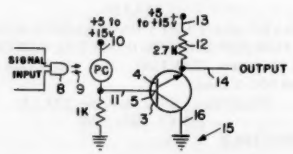


The illustrated control systems include a line running along the path to be traveled by a vehicle. Consecutive sections of the line are offset to face different locations of the vehicle as that vehicle moves along the path. The position of the vehicle along the path is identified by identifying the location on the vehicle facing the line. Control signals are then supplied to the vehicle causing it to move at a rate appropriate with its identified position.

3,813,539
ELECTRO-OPTICAL COUPLER UNIT

Edward M. Sioma, Levittown, Pa., assignor to Rohm & Haas Company, Philadelphia, Pa.

Filed Jan. 31, 1973, Ser. No. 328,554
Int. Cl. H01j *39/12*
U.S. Cl. 250—206 **9 Claims**

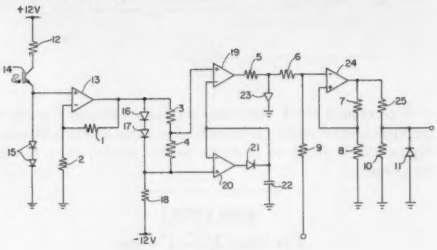


The present invention is concerned with an electro-optical coupler unit using a transistor in conjunction with a photocell and an actuating light source having improved reliability by virtue of the circuitry of the system. In accordance with the present invention the transistor in the photocell circuit is arranged to operate in an inverted mode rather than in the normal mode. By virtue of such operation, interference with operation of the control unit containing the photocell and transistor as a result of stray electromagnetic disturbances is effectively eliminated.

3,813,540
CIRCUIT FOR MEASURING AND EVALUATING OPTICAL RADIATION

Peter Albrecht, Augsburg, Germany, assignor to The National Cash Register Company, Dayton, Ohio

Filed Mar. 26, 1973, Ser. No. 344,824
Int. Cl. H01j *39/12*
U.S. Cl. 250—206 **2 Claims**

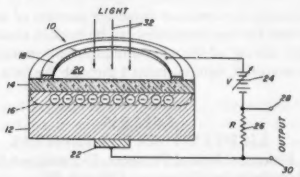


The invention relates to a circuit for optically sensing coded data on a record medium and including a photosensitive transducing element such as a phototransistor. In order to render the circuit independent of background brightness variations, the load impedance of the transducing element includes one or more of series connected diodes which have an exponential characteristic curve, so that the voltage drop across the diode or diodes is proportional to the natural logarithm of the current flowing through the transducing element. The voltage difference resulting from sensing contrasting marks on the record medium thus depends only on the contrast in reflected light and not on the absolute value of the current in the transducing element.

3,813,541
MOS PHOTODIODE

Norman A. Foss, Weston, and Samuel A. Ward, Riverside, both of Conn., assignors to Columbia Broadcasting System, Inc., Stamford, Conn.

Continuation of Ser. No. 144,002, May 17, 1971, abandoned.
This application Aug. 2, 1973, Ser. No. 384,922
Int. Cl. H01l *11/00, 15/00*
U.S. Cl. 250—211 J **4 Claims**



A photodetector which comprises an MOS structure having a very small non-obscuring front contact, in the form of a dot or ring, plus the usual ohmic contact to the semi-conductor body. The device is adapted to be reverse-biased to give a

wide depletion range, and an inversion layer at the semiconductor-insulator interface conducts electrons along the surface from the point of generation by absorption of photons to the region of the front contact. The device has a relatively large light-sensitive area, exhibits fast response time, and has a spectral characteristic of high quantum efficiency over the range of about 0.2 to 1.1 microns wavelength.

3,813,542

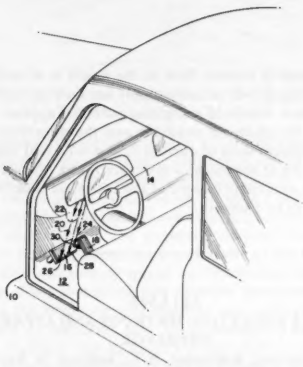
BRAKE SIGNAL DEVICE FOR A VEHICLE

Joe Spadafora, 65 Forest Manor Rd., No. 502, Willowdale, Ontario, Canada

Filed Sept. 7, 1972, Ser. No. 287,008

Int. Cl. G01p *3/68*

U.S. Cl. 250—221 **5 Claims**



A brake signal device for a vehicle in which a beam of light is directed with respect to the brake pedal of the vehicle in a manner so that it is interrupted when the vehicle operator moves his foot to a position engaging the pedal. An electrical circuit including a photocell is responsive to the interruption of the beam for energizing a brake signal light normally mounted at the rear of the vehicle.

3,813,543

PATTERN DETECTING APPARATUS

Mikio Naya, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Nov. 29, 1972, Ser. No. 310,508

Claims priority, application Japan, Dec. 23, 1971, 46-2519

Int. Cl. G01n *21/32*

U.S. Cl. 250—562 **13 Claims**

An apparatus comprising an image-forming optical system for projecting reflected light from an article to be inspected and travelling on a conveyor onto an imaginary fixed plane to form an image thereon, a similar pattern resembling the pattern of portion of the article to be detected and permitting the passage of reflected light within the same area as the pattern of the portion to be detected, a photoelectric transducer disposed to receive the light passing through the pattern, an arithmetic circuit for calculating the difference between the electrical output level of the photoelectric transducer and an electrical level serving as a reference for judgement, position detecting means for detecting that the article has reached an inspecting position, and a logic circuit for generating an electrical instructing signal in response to a judging output signal from the arithmetic circuit and an article detecting signal from position detecting means.

3,813,544

METHOD FOR EVAPORATING, DESTROYING, EXCITING AND/OR IONIZING SPECIMEN MATERIAL LIMITED TO MICRO-REGIONS, AND ARRANGEMENT FOR CARRYING OUT THIS METHOD

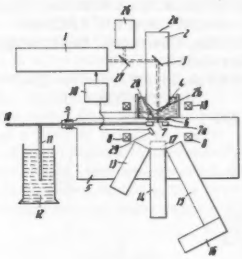
G. Franzen, Munich; Franz Hillenkamp, Freising; Raimund Kaufman, Freiburg, and Ernst Remy, Munich, all of Germany, assignors to Ernst Remy, Munich, Germany

Filed Aug. 16, 1972, Ser. No. 281,231

Claims priority, application Germany, Aug. 18, 1971, 2141387

Int. Cl. H01j *39/34*

U.S. Cl. 250—281 **26 Claims**



Method and apparatus for examining micro-regions of biologic specimens normally radiation absorptive in which a source of coherent electromagnetic radiation is optically focused on a selected region of the specimen. The power density is adjusted in the central diffraction disk to the point where the specimen becomes absorbent, the power density distribution in the first diffraction ring being below the level necessary to initiate absorption in the said first diffraction ring. In its preferred form, the coherent radiation is fed to a microscope having a cooled objective through which focusing on a selected micro-region is achieved.

3,813,545

X-RAY SCAN AREA MAPPING SYSTEM

Morris W. Barnhart, Buffalo Grove, Ill., and John C. Russ, Raleigh, N.C., assignors to Edax International, Inc., Prairie View, Ill.

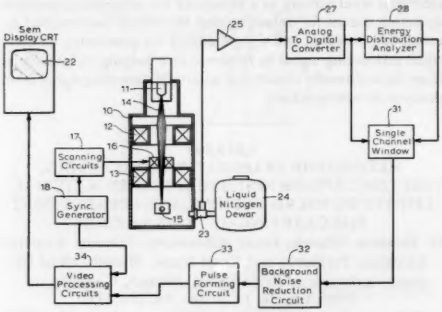
Filed Apr. 12, 1973, Ser. No. 350,616

Int. Cl. H01j *37/26*

U.S. Cl. 250—306 **11 Claims**

An X-ray scan area mapping system for a scanning electron microscope provides a spacial area map display of X-ray events emitted from a specimen within at least one energy range as the specimen is scanned at scanning electron microscope rates by an electron beam. A background X-ray noise reduction circuit enables intensification of the scanning electron microscope cathode-ray tube display upon the occurrence of an X-ray event within the energy range and disables intensification when the time between consecutive X-ray

events within the energy range exceeds a predetermined time period. Background X-ray events occur at much slower rates than the X-ray events emitted from the specimen within the

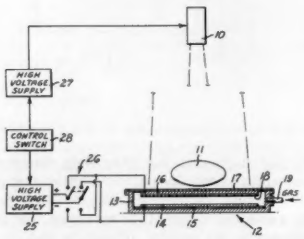


energy range, and therefor, a substantial reduction in background noise on the scanning electron microscope display is obtained.

3,813,546
PROCESS OF MAKING A SUBTRACTED IMAGE RADIOGRAPHIC RECORD

Andrew P. Proudian, Chatsworth, Calif., assignor to Xonics, Inc., Van Nuys, Calif.

Filed Feb. 28, 1973, Ser. No. 336,709
Int. Cl. G03b *41/16*
U.S. Cl. 250—315 **2 Claims**



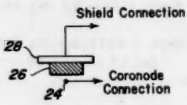
Method and apparatus using an electron radiographic system for making a subtracted image record of an object. The method includes the steps of making the first exposure with a first polarity for the field between the electrodes, reversing the polarity and making a second exposure on the same dielectric receptor, and developing the resultant electrostatic image, typically with a contrast material being introduced into the object between the exposures.

3,813,547
CORONA GENERATING APPARATUS

Morton Silverberg, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Division of Ser. No. 108,302, Jan. 21, 1971, Pat. No. 3,769,506. This application Aug. 23, 1972, Ser. No. 283,123The portion of the term of this patent subsequent to Oct. 30, 1990, has been disclaimed.
Int. Cl. G03g *15/02*
U.S. Cl. 250—324 **2 Claims**

Improved corona generating methods and apparatus therefor are provided in accordance with the teachings of this invention wherein a medium in relative motion with a charging station may be rapidly charged to a desired potential in a highly efficient manner. According to one embodiment of the present invention, corona charging apparatus including at least one coronode and having a shield associated therewith is provided and operated in such manner that current flow in the shield is maintained above a selected minimum level during the operation of the corona charging apparatus. The selected

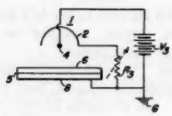


minimum level of current flow in the shield is of such value that the coronode will initially supply ion current with a substantially lower threshold energizing potential applied thereto than would be otherwise available and the directivity of the selected minimum level of current flow is such that the potential established at the shield will ensure that a majority of the ion charging current produced at the coronode is delivered to the medium to be charged.

3,813,548
CORONA GENERATING METHODS AND APPARATUS THEREFOR

Morton Silverberg, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 108,302, Jan. 21, 1971, Pat. No. 3,769,506. This application Aug. 23, 1972, Ser. No. 283,244The portion of the term of this patent subsequent to Oct. 30, 1990, has been disclaimed.
Int. Cl. G03g *13/02*, *15/02*
U.S. Cl. 250—324 **7 Claims**



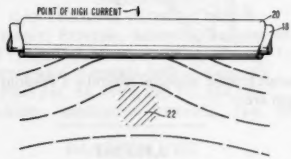
Improved corona generating methods and apparatus therefor are provided in accordance with the teachings of this invention wherein a medium in relative motion with a charging station may be rapidly charged to a desired potential in a highly efficient manner. According to one embodiment of the present invention, corona charging apparatus including at least one coronode and having a shield associated therewith is provided and operated in such manner that current flow in the shield is maintained above a selected minimum level during the operation of the corona charging apparatus. The selected minimum level of current flow in the shield is of such value that the coronode will initially supply ion current with a substantially lower threshold energizing potential applied thereto than would be otherwise available and the directivity of the selected minimum level of current flow is such that the potential established at the shield will ensure that a majority of the ion charging current produced at the coronode is delivered to the medium to be charged.

3,813,549

SELF-HEALING ELECTRODE FOR UNIFORM NEGATIVE CORONA

Thomas H. Di Stefano, Dobbs Ferry; Robert B. Laibowitz, and Robert Rosenberg, both of Peekskill, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 26, 1972, Ser. No. 317,973
Int. Cl. G03g 15/02
U.S. Cl. 250—324 9 Claims



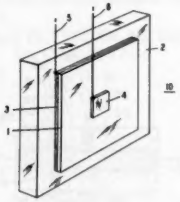
The present invention relates to electrodes used for charging electrophotographic image surfaces in copying machines. More particularly, the disclosure is directed to the negative corona discharge electrodes which produce a negative charge that is applied to the photoconductive surface exposed to the corona discharge. In the present invention, the electrode structure includes a combination of a wire of valve metal with a high resistivity coating spread uniformly over the surface of the wire. The valve metal, one example being tantalum, may serve as the electrode wire itself or may surround an inner wire such as stainless steel. By providing an electrode for corona discharge having a uniform high resistive coating, the plasma glow produced will spread uniformly along the length of the wire. By using a valve metal, which forms a hard oxide under the high resistivity coating, the electrode is self-healing in that if cracks or imperfections occur in the coating, the exposed valve metal will oxidize and fill in the cracks and imperfections.

3,813,550

PYROELECTRIC DEVICES

Richard Lee Abrams, Morris Township, Morris County, and Alastair Malcolm Glass, Murray Hill, both of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Continuation of Ser. No. 35,309, May 7, 1970, abandoned.
This application Dec. 12, 1972, Ser. No. 314,376
Int. Cl. G01t 1/16
U.S. Cl. 250—338 5 Claims



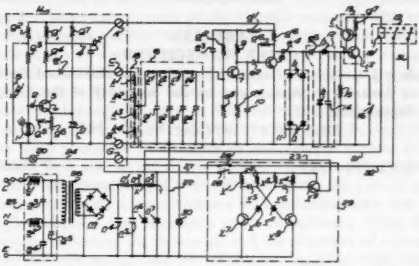
The frequency response of crystalline pyroelectric detectors for modulated infrared carriers is increased by mechanical damping so as to avoid a mechanical resonance limitation. Clean response for pulse trains at frequencies in excess of a megabit per second at incident power below 1 watt is attainable.

3,813,551

FIRE DETECTION APPARATUS

Arnold Broadbent, and Peter Frost, both of Shaw, England, assignors to Talentum Developments Limited, Oldham, England

Filed Jan. 15, 1973, Ser. No. 323,507
Int. Cl. G01j 5/00
U.S. Cl. 250—338 10 Claims



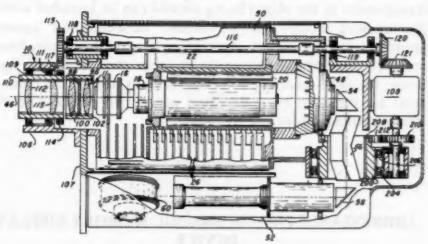
The invention comprises an infra-red flame and spark fire alarm apparatus comprising an infra-red radiation detection cell the signals from which are amplified, and arrangements for decoupling the supply line to the cell and amplified by two current paths to reduce the effect of transient A.C. pulses, feeding the amplified signals at millivolt level through a sensitivity control to a low pass filter and to a two stage coupled amplifier to give a gain of the order of 2,500 and feeding the output from the amplifier to a diode limiter or clipping circuit, the square wave output from the limiter being fed to a diode integrator, and a bistable switch to operate at a minimum input voltage of 0.5v obtained by successive pulses from the diode integrator within a prescribed period, the triggering of the bistable switch causing current to flow to switch a thyristor shorting out a supply line and giving an alarm signal.

3,813,552

IMAGE ROTATION DEVICE FOR AN INFRARED SCANNING SYSTEM OR THE LIKE

Ralph B. Johnson, Huntsville, Ala., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 2, 1973, Ser. No. 320,402
Int. Cl. G02b 23/02; G01t 1/16
U.S. Cl. 250—347 8 Claims



An infrared scanning system which does not require the use of scanning mirrors is disclosed. A cylindrical device having two cylindrical optical elements arranged in an afocal manner forms an image at infinity. As the cylindrical device is rotated about its longitudinal axis the image is rotated about the longitudinal axis at twice the rotational rate of the rotation of the device. A lens system focuses infrared energy radiating from the scene on an array of detectors supported at one end of a

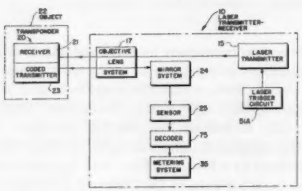
support member. An array of emitters is mounted on the opposite end of the support member and the electronics necessary to interface the detector array with the emitters is mounted on the outer surface of the support member. The central portion of the support member also includes a mechanical cryogenic refrigerator for cooling the detector array. A television camera is focused on the emitter array to produce a television image of the scene scanned.

3,813,553

LASER TRANSCIEVER

Sidney J. Grossman, Ocean, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 17, 1973, Ser. No. 361,384
Int. Cl. G01t 1/16
U.S. Cl. 250—347 **7 Claims**



A laser transceiver device useful in combination with an object to be viewed which object carries a suitably coded transponder, which laser transceiver includes a single objective lens system positioned for both transmission and reception of laser energy, a detector, and a tiltable mirror system for alternatively directing transmitted laser energy onto said objective lens system and said received laser energy onto said detector.

The laser transceiver device can consist of a modified single lens reflex camera having a quick return mirror; the modifications of such a camera include replacing the film by a small solid state laser and by either removing the shutter curtain or restraining it in the fully open position. The camera can be further modified to include a trigger circuit for pulsing the laser and means for operating the trigger circuit in synchronism with operation of the normal camera exposure release mechanism. A decoder corresponding to the coded transponder in the object being viewed can be installed within the camera body and connected between the camera photocell and the camera metering system. If the energy beam received from the transponder is other than a visible light beam, the light-reading photocell normally used in the camera must be replaced by a detector which can respond to the received transponder energy beam.

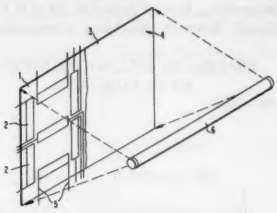
3,813,554

ADDRESSABLE PHOTOCHROMIC MEMORY DISPLAY DEVICE

Ifay F. Chang, Mahopac, and Russell W. Dreyfus, Cross River, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 12, 1972, Ser. No. 314,290
Int. Cl. G01n 21/38
U.S. Cl. 250—461 **27 Claims**

An addressable photochromic memory display device comprising a readout area of a photochromic material, a means for uniformly exposing the photochromic material to electromagnetic radiation whereby the photochromic material changes color, a means for reversing the color change in selected areas



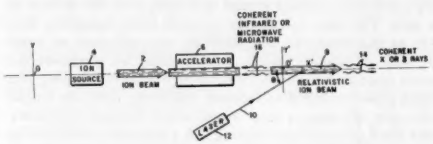
of the photochromic material whereby a readout is formed in the readout area.

3,813,555

METHOD AND MEANS FOR PRODUCING COHERENT X-RAY AND GAMMA-RAY EMISSIONS

James A. Viecelli, Oakland, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed May 16, 1973, Ser. No. 360,983
Int. Cl. H01j 35/00
U.S. Cl. 250—493 **7 Claims**



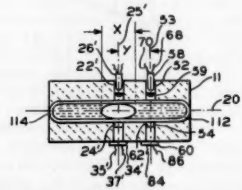
A method and apparatus for producing coherent x-ray and gamma-ray emissions by taking advantage of doppler shift phenomena and the relativistic effects of time dilation, wave vector angle compression, and length compression associated with an active optical lasing medium moving at a uniform velocity very nearly equal to the speed of light.

3,813,556

TILT LIMIT DETECTING APPARATUS

Emanuel E. Beer, Eastchester, and Eric H. Jeltrup, Ossining, both of N.Y., assignors to The Singer Company, Little Falls, N.J.

Filed Apr. 27, 1972, Ser. No. 248,131
Int. Cl. G01d 5/34; G01n 21/26
U.S. Cl. 250—575 **13 Claims**



A tilt limit detecting device which utilizes a bubble level containing a prescribed amount of opaque fluid and a photodector arrangement transverse to the longitudinal axis of the bubble level. The photodector arrangement includes a pair of light source-photocell combinations the first of which is

normally positioned at the center of the bubble in the level position while the second combination is spaced a distance Y from the first, such that the distance Y is less than the bubble length X. The opaque fluid acts as a shutter interposed between the light source-photocell combinations, so that with the connection of suitable electronic circuitry to the photocells angular tilts in excess of the allowable limit, which generally equals X/2 in radians, are detected as well as the particular direction, clockwise or counter clockwise, identified.

3,813,557

GAS TURBINE VEHICLE DRIVE

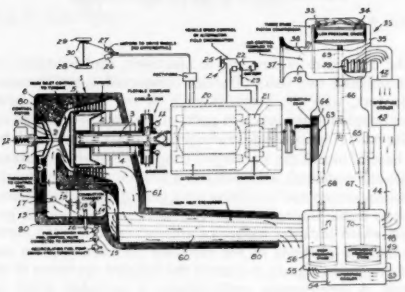
Alfred H. Traeger, Erindale, Australia, assignor to Traeger Patents PTY. Limited, Marryatville and Traeger Charitable Trust Incorportated, Adelaide, both of, Australia

Filed Jan. 18, 1973, Ser. No. 324,584

Claims priority, application Australia, Jan. 20, 1972, 7717/72

Int. Cl. B60l *11/02*

U.S. Cl. 290—2 **3 Claims**



A vehicle in which a coupled gas turbine and compressor and electrical generator are rotationally coupled to be pulsed under speed governor control to run at a relatively constant speed, and drive from the generator is controlled to supply the required power to motors coupled to the vehicle wheels, the compressor preferably being a piston compressor with air inlet control, the turbine also having controlled gas intake by regulating gas input and also gas generator in the combustion chamber, all under control of the speed governor.

3,813,558

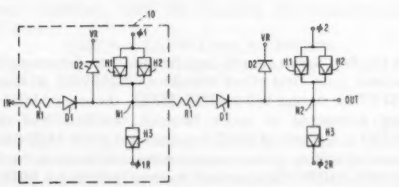
DIRECTIONAL, NON-VOLATILE BISTABLE RESISTOR LOGIC CIRCUITS

Paul John Krick, Katonah, and Peter Pleshko, Crugers, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 26, 1972, Ser. No. 266,173

Int. Cl. G11c *11/36*

U.S. Cl. 307—221 R **10 Claims**



A circuit consisting of a pair of bistable resistors connected in series at a node to which current may be applied and from which current may be drawn and having a source of potential connected to each bistable resistor is disclosed. The bistable resistors are oriented physically in the same direction such that current in a given direction which exceeds a threshold and which switches the bistable resistors into a high resistance state can be characterized as the forward direction. Conversely, current in the opposite direction to the given direction which, when it exceeds a threshold, switches the devices from a high resistance state into a low resistance state can be characterized as the backward direction. With appropriately applied potentials to each of the bistable resistors, with one potential more positive than the other, current can be made to flow in the forward and backward directions. In the forward direction, both resistors are switched into or remain in a high resistance or RH state. When current flows in the backward direction through the pair of bistable resistors, they switch into or remain in the low resistance or RL state. By applying the same potentials to the bistable resistors and causing current to flow into or out of the node at which the bistable resistors are connected, it is possible to cause the pair of resistors to assume a low resistance high resistance state and, a high resistance low resistance state, respectively. Thus, by simply controlling the potentials and the direction of current flow through each of the pair of bistable resistors, four, non-volatile, stable states are achievable as opposed to a maximum of two volatile states in similarly arranged tunnel diode circuits, for example. Because the arrangements shown are inexpensive, easy to fabricate and permit high packing densities, circuits such as shift registers which utilize large numbers of similarly arranged logic circuits are most attractive. In addition, the nanosecond switching speeds available in bistable resistors make them superior to other known switching devices of slower switching speed. A shift register circuit incorporating three of the four non-volatile, stable states available with the logic circuits is also disclosed. The shift register utilizes a low resistance-high resistance state to represent a binary "one" and a high resistance-high resistance state and a high resistance-low resistance state to represent a binary "zero."

3,813,559

NOISE REDUCTION CIRCUIT

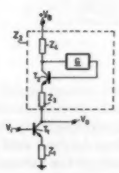
Jacob De Boer, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 28, 1972, Ser. No. 293,121

Claims priority, application Netherlands, Mar. 30, 1972, 7204290

Int. Cl. H03k *5/08*; H04b *1/10*

U.S. Cl. 307—237 **12 Claims**

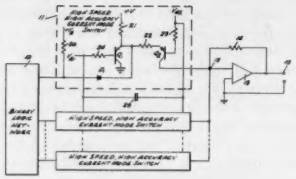


A noise reduction circuit has a transistor and impedance elements coupled to its emitter and collector respectively and an input signal applied to its base. The impedance of the collector impedance element is a function both the amplitude and frequency of the input signal. It can be another transistor and a variable bandpass filter. A switch can be part of the circuit so that it can be used during both recording and reproducing.

3,813,560
CURRENT MODE SWITCH FOR HIGH SPEED DIGITAL-TO-ANALOG CONVERSION

Jon Halloran Grant, Diamond Bar, and Raymond W. Pauly, Newport Beach, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Apr. 30, 1970, Ser. No. 43,614
Int. Cl. H03k 17/60, 13/02
U.S. Cl. 307—253 10 Claims

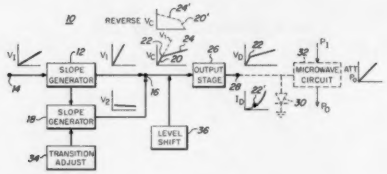


A current mode switch for high speed digital-to-analog conversion using first and second transistors with matched V_{BE} characteristics. A first resistor between a power source and the emitter of the first transistor provides current to be switched from an input control diode to a summing junction through a second resistor connected between the emitters of the two transistors. The difference between reference voltages on the bases of the transistors determines the level of current through the second resistor, and the high impedance of the second resistor in series with the second transistor reduces the level of noise and switching transient energy coupled to the summing junction. For applications not requiring accuracy, a diode may be substituted for the first transistor and the second transistor may be common to other current switches.

3,813,561
VOLTAGE CONTROL SWITCH DRIVER

Heyward Sturges Williams, Amherst, and Robert Robbins, Hudson, both of N.H., assignors to LRC, Inc., Hudson, N.H.

Filed Oct. 16, 1972, Ser. No. 297,808
Int. Cl. H03k 1/14, 6/04
U.S. Cl. 307—263 8 Claims

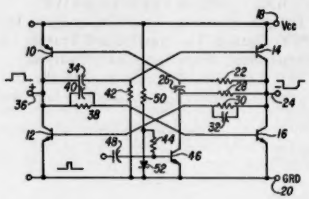


A diode switch driver circuit which utilizes a composite voltage having a composite slope including a first slope up to a predetermined region corresponding to the diode breakover region, and a second slope beyond that predetermined region for optimizing the linearity of the attenuation characteristic of a driven diode switch relative to the input drive voltage of the switch driver circuit comprising slope generating means, responsive to the input drive voltage, for producing a voltage having one of the first and second slopes; level shifting means, connected with the slope generating means for varying the voltage level of the voltage having one of the first and second slopes; and an output stage including a current amplifier circuit having a high input impedance and low output impedance responsive to the voltage having one of the first and second slopes for producing an output drive voltage for operating a diode switch.

3,813,562
TRIGGERED MONOSTABLE MULTIVIBRATOR CIRCUIT UTILIZING COMPLEMENTARY TRANSISTOR PAIRS

Robert A. Stehlin, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 166,288, July 26, 1971, Pat. No. 3,767,944, which is a continuation of Ser. No. 787,793, Dec. 30, 1968, abandoned. This application Apr. 5, 1973, Ser. No. 348,387
Int. Cl. H03k 3/10
U.S. Cl. 307—273 5 Claims

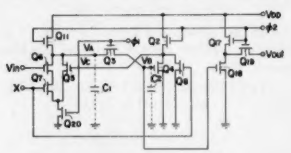


The disclosure is directed to electronic multivibrator circuits utilizing two pairs of series connected complementary transistors, with the bases of each of the transistors being cross-coupled to the juncture point of the transistors of the opposite pair. A monostable multivibrator is provided which has the base of one of the transistors coupled through a resistance to ground potential, and includes a normally non-conductive transistor connected to receive a triggering signal for initiating a mono-stable timing period. A bistable multivibrator is provided which includes triggering transistors connected across symmetrical portions of the circuitry for receiving set and reset triggering signals to control the bistable operation of the circuit. A free-running multivibrator is provided which includes resistive current paths from two of the transistor bases to ground potential for generation of a periodic pulse train output upon the application of electrical power.

3,813,563
FLIP-FLOP CIRCUIT

Yoshikazu Hatsukano; Kosei Nomiya, and Shuichi Torii, all of Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed June 26, 1973, Ser. No. 373,758
Claims priority, application Japan, June 26, 1972, 47-63241
Int. Cl. H03k 3/286
U.S. Cl. 307—279 8 Claims



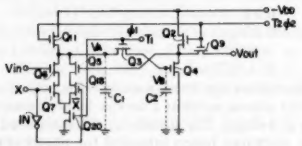
A flip-flop circuit comprising a first inverter including a first insulated gate field-effect transistor (MISFET), a second MISFET for storage and a third MISFET, the second MISFET being connected in series between the first and third MISFET's; a fourth MISFET for input and a fifth MISFET for control of writing as are connected in series between the first and third MISFET's; a second inverter including a MISFET for load and a sixth MISFET for storage as are connected in series with each other; a seventh MISFET for transfer as is connected between an output terminal of the first inverter and an input electrode of the sixth MISFET; and an eighth

MISFET connected in parallel with the sixth MISFET. An output terminal of the second inverter is feedback-connected to an input electrode of the second MISFET, input electrodes of the third and seventh MISFET's are applied with a first train of clock pulses, an input electrode of the first MISFET is applied with a second train of clock pulses differing in phase from the first train of clock pulses, an input electrode of the fourth MISFET is applied with an input signal, input electrodes of the fifth and eighth MISFET's are applied with a writing control signal adapted to render the fifth and eighth MISFET's conductive at writing when at least the third and seventh MISFET's are conductive, and an output signal is derived from the input electrode of the sixth MISFET.

3,813,564
FLIP-FLOP CIRCUIT

Yoshikazu Hatsukano; Kosei Nomiya, and Shuichi Torii, all of Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed June 26, 1973, Ser. No. 373,761
Claims priority, application Japan, June 28, 1972, 47-64018
Int. Cl. H03k *3/286*
U.S. Cl. 307—279 **6 Claims**



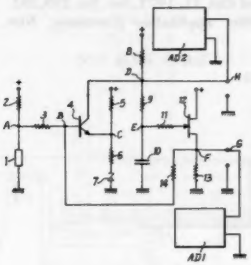
A flip-flop circuit includes a first inverter including a first insulated gate field-effect transistor (MISFET), a second MISFET for storage, and a third MISFET for control of writing and a fourth MISFET, the second and third MISFET's being connected in series between the first and fourth MISFET's. A fifth MISFET for receiving an input signal and a sixth MISFET for control of writing are connected between the first and fourth MISFET's. A second inverter including a seventh MISFET for storage and a MISFET for a load thereof are connected in series with each other, an output terminal of the second inverter being feedback-connected to an input electrode of the second MISFET. An eighth MISFET for transfer is connected between an output terminal of the first inverter and an input electrode of the seventh MISFET. The third MISFET is rendered non-conductive and the sixth MISFET conductive at writing when at least the fourth and eighth MISFET's are conductive.

3,813,565
DETECTOR APPARATUS

Robert Guilleux, Allee des Tamaris, 92-Plessis-Robinson, France

Filed Nov. 13, 1972, Ser. No. 305,680
Claims priority, application France, Nov. 15, 1971, 71.40728; Dec. 31, 1971, 71.47781
Int. Cl. H03k *3/26*
U.S. Cl. 307—308 **6 Claims**

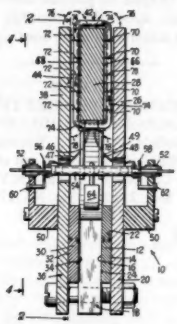
An apparatus for detecting changes in a physical quantity comprises a sensitive element responding to changes in the quantity by varying an electrical potential. An amplifier fed with the varying potential provides an output signal by way of a time-constant circuit to a high input-impedance active device from the output of which negative feedback is taken to the amplifier input. The amplifier output signal is denotive of change in the sensed quantity and the high input impedance active element yields a signal denotive of rate of change of the quantity. The sensitive element may be an ionisation chamber and the active element an FET. The amplifier is a transistor, which may be an FET.



3,813,566
ELECTROMAGNETIC MOTIVE DEVICE

Harrison F. Edwards, Norwich, N.Y., and Louis A. Pannullo, Waterbury, Conn., assignors to The Lewis Engineering Company, Naugatuck, Conn.

Filed Dec. 26, 1972, Ser. No. 318,577
Int. Cl. H02k *33/18*
U.S. Cl. 310—36 **14 Claims**

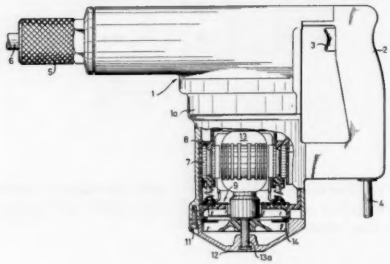


A high torque electromagnetic motive device comprising a permanent magnet slab having north and south poles respectively at its opposite sides, and comprising two essentially flat pole pieces each of annular configuration and each having a pair of corresponding portions engaged broadside with the opposite sides of the permanent magnet. Other portions of the pole pieces are disposed in spaced relation to one another so as to define an air gap. The device includes a coil in the form of a loop, which links one of the pole pieces, and means for movably mounting the coil to enable it to travel in an arcuate path in said air gap and along an annular portion of the pole piece that it links. The arrangement is such that an especially large angular displacement of the coil in excess of 200° is made possible, combined with high torque and low power consumption.

3,813,567
ELECTRICAL CONTACT FOR STATORS IN ELECTRIC TOOLS

Peter Schmuck, Mauren, Liechtenstein, Germany, assignor to Hilti Aktiengesellschaft, Schaan, Fuerstentum, Germany

Filed Oct. 11, 1972, Ser. No. 299,392
Claims priority, application Germany, Nov. 8, 1971, 2155457
Int. Cl. H02k 7/14
U.S. Cl. 310—50 10 Claims

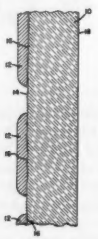


In an electric tool, a stator is secured within the tool housing against rotation and it is resiliently biased and held within the housing by means of a removable housing cover and springs. Contacts are provided on the stator and other contacts are connected to carbon brushes so that the resilient biasing action afforded by the cover and the springs holds the stator contacts and the carbon brush contacts in electrical engagement. The contacts are shaped to provide automatic engagement and disengagement upon the assembly and disassembly, respectively, of the stator within the housing.

3,813,568
CONTRAST-ENHANCING PICTURE TUBE FACEPLATE AND PROCESS FOR PRODUCING SAME

Stanley J. Scott, Buffalo; William J. Noroski, North Syracuse, and Wilfred D. Rublack, Liverpool, all of N.Y., assignors to General Electric Company, Syracuse, N.Y.

Filed Aug. 2, 1972, Ser. No. 277,398
Int. Cl. H01j 29/18
U.S. Cl. 313—92 R 3 Claims



Reflectivity of the faceplate of a color television receiver picture tube is reduced in order to achieve improved contrast in displayed images with minimal decrease in brightness and without objectionable halation of the displayed image by blasting the inner surface of the faceplate with an air-propelled slurry of abrasive particles having substantially uniform size in the range of 5–16 microns in diameter, preferably 9.5 microns. The abrasive-blasted surface of the faceplate is then etched in hydrofluoric acid. The faceplate thus processed exhibits an inner surface pitted with craters having an average diameter of approximately 5 microns and depths ranging up to approximately 1.5 microns at a density of substantially 10^7 craters per square centimeter.

3,813,569
LUMINESCENT SCREEN AND MERCURY VAPOR DISCHARGE LAMP CONTAINING SAME

Judicus Marinus Pieter Jan Verstegen, and Emiel Petrus Juliaan De Meester, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 8, 1972, Ser. No. 313,599
Claims priority, application Netherlands, Dec. 18, 1971, 7117430
Int. Cl. C09k 1/54
U.S. Cl. 313—108 R 7 Claims

A luminescent silicate activated by bivalent europium defined by the formula

$Sr_{1-x-y-z-p}Ba_xCa_yMg_zEu_pB_2Si_2O_8$

in which

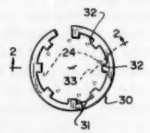
$0 < x \leq 0.60$
$0 < y \leq 0.50$
$0 < z \leq 0.25$
$0.01 \leq p \leq 0.20$
$x+y+z+p \leq 0.70$.

Upon excitation by short-wave or long-wave ultraviolet radiation the silicate exhibits a narrow band emission having a maximum at 440 nm. The silicate is preferably used in mercury vapour discharge lamps intended for photocehmical purposes.

3,813,570
ENHANCED LOW CAPACITY SOCKET

Christ J. Dumas, 4600 S. Wisconsin, Forest View, Ill. 60402

Continuation of Ser. No. 78,656, Oct. 7, 1970, abandoned.
This application Aug. 4, 1972, Ser. No. 278,102
Int. Cl. H01j 5/48
U.S. Cl. 313—318 15 Claims



An enhanced low capacity socket assembly including ground means disposed therein, the ground means terminating in a series of point sources disposed in juxtaposition with respect to terminal pin contact means thereby to form close tolerance air dielectric capacitive means.

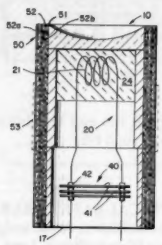
3,813,571
INSULATED CATHODE GUN DEVICE

Algerd Basiulis, Redondo Beach, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Apr. 9, 1973, Ser. No. 349,157
Int. Cl. H01j 1/00; H01k 1/02
U.S. Cl. 313—326 5 Claims

A cathode gun device having an improved heat shield for greater operating efficiency is disclosed. The device includes a

tubular cathode electrode, a heater electrode, a plurality of heat shields that are heat reflective, and a plurality of heat shields that are of low thermal conductivity arranged in an alternate fashion.



3,813,572

CAMERA TUBE CONVERTIBLE FROM INTEGRAL MESH TO SEPARATE MESH TYPE

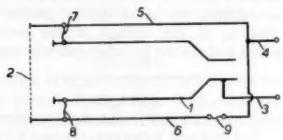
Hans Scholz, Essex, England, assignor to English Electric Valve Company Limited, Chelmsford, Essex, England

Filed Jan. 22, 1973, Ser. No. 325,458

Claims priority, application Great Britain, Feb. 17, 1972, 7353/72

Int. Cl. H01j *29/96, 21/28, 29/02*

U.S. Cl. 315—3 **4 Claims**



A camera tube has a wall anode and a mesh electrode which is separate from the wall anode. Connection is made to the mesh electrode from a terminal outside the tube envelope by means of two diammetrically opposed conductors which are connected to the wall anode by fuses which after completion of manufacture may be fused to convert the tube from one of the integral mesh type to one of the separate mesh type.

3,813,573

CIRCUIT ARRANGEMENT FOR GENERATING A VARIABLE MAGNETIC FIELD

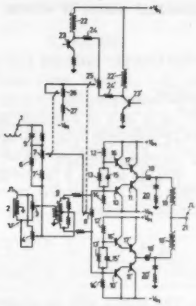
Jan Lolke De Vries, Assen, and Alt Liemburg, Emmasingel, Eindhoven, both of Netherlands, assignors to U. S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 117,345, Feb. 22, 1971, abandoned. This application July 9, 1973, Ser. No. 377,798

Int. Cl. H01j *29/70*

U.S. Cl. 315—13 C **5 Claims**

A circuit arrangement for generating a magnetic field periodically varying with time and being adjustable in amplitude, in which an extreme value of the field must be adjusted at a fixed level. The field is generated by a coil which is wound on a core of magnetic material. An auxiliary coil is wound on the same core through which coil a direct current adjustable by means of a potentiometer circuit flows in such a manner that the extreme value of the resultant field is adjusted at a fixed level. One embodiment of the circuit arrangement includes two mechanically coupled potentiometers. One possibility of use thereof is the convergence in a colour picture display apparatus in which the field is the combination of a parabolic and a sawtooth component. In the case of the horizontal convergence, the auxiliary coil may be the vertical convergence coil.



3,813,574

HIGH VOLTAGE TRANSFORMER DEVICE IN A HORIZONTAL DEFLECTION CIRCUIT

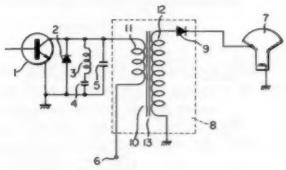
Kohei Sato, Ikeda, Japan, assignor to Matsushita Electric Co., Ltd., Osaka, Japan

Filed Nov. 14, 1972, Ser. No. 306,406

Claims priority, application Japan, Nov. 18, 1971, 46-92893; Nov. 27, 1971, 46-95599; Dec. 8, 1971, 46-99758; Jan. 24, 1972, 47-9273

Int. Cl. H01j *29/70*

U.S. Cl. 315—29 **36 Claims**



A high voltage transformer device in a horizontal deflection circuit supplying an extra high tension (E_{HT}) to the anode of cathode-ray tube, which comprises a low-voltage coil (primary winding) and a high-voltage coil (secondary winding) including a high-voltage side winding and a low-voltage side winding, wherein the high-voltage side winding of the high-voltage coil is more closely magnetically coupled to the low-voltage coil than the magnetic coupling between the low-voltage side winding of the high-voltage coil and the low-voltage coil, thereby suppressing variations of the high voltage output, and improving the trackability of the focusing voltage when a focusing coil is additionally provided.

3,813,575

ELECTROLUMINESCENT DISPLAY SYSTEM AND METHOD OF DRIVING THE SAME

Robert D. Webb, Hacienda Heights, Calif., assignor to Sigmatron, Inc., Santa Barbara, Calif.

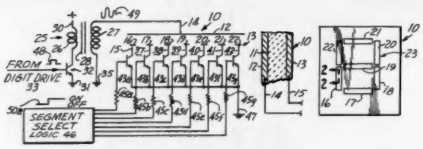
Filed Nov. 8, 1971, Ser. No. 196,434

Int. Cl. H05b *37/00*

U.S. Cl. 315—167 **18 Claims**

An electroluminescent display utilizing a capacitive display device. The display has an inherent minimum useful illumina-

tion term, during which it must be actuated in order to be seen by an observer. The display is driven (actuated), so as to be illuminated, by pulses of actuating alternating current, and there will be more than one of these pulses during each said minimum useful illumination term. The pulse term, or duration, of the individual pulses is shorter than the interval



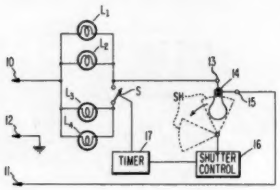
between pulses. The pulses may be shaped so as most efficiently to transfer energy to the display. The driving system improves the efficiency and lengthens the life of single displays, and permits higher-intensity operation of multiple displays. A useful driving system includes a pulse transformer which produces the desired actuating current when it is itself pulsed.

3,813,576

SERIES REGULATED POWER SUPPLY FOR ARC DISCHARGE LAMPS UTILIZING INCANDESCENT LAMPS

Fausto Caprari, Jersey City, N.J., assignor to RCA Corporation, New York, N.Y.

Filed July 21, 1972, Ser. No. 273,750
Int. Cl. H05b *37/00*
U.S. Cl. 315—205 **8 Claims**



A series regulated power supply for an arc discharge lamp is disclosed whereby at least one incandescent lamp is connected in series with the arc discharge lamp to establish a first current level. At least one other incandescent lamp is connected in shunt with the first lamp to establish a second current level. The incandescent lamps provide current regulation for the arc discharge lamp.

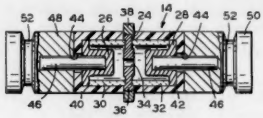
3,813,577

OVERVOLTAGE PROTECTION APPARATUS HAVING FUSIBLE RING AND SHORT CIRCUIT MEANS OPERATED THEREBY

Chester J. Kawiecke, Santa Barbara, Calif., assignor to Joslyn Mfg. and Supply Co., Chicago, Ill.

Filed Dec. 20, 1972, Ser. No. 316,738
Int. Cl. H02h *3/20*
U.S. Cl. 317—16 **10 Claims**

An overvoltage protection apparatus is described in which a fusible ring of low melting termperature metal is provided in contact around an intermediate ground electrode of the overvoltage protection device. The fusible ring is engaged by spring biased mounting clips connected to ground which move



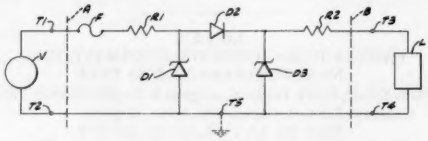
inwardly to short circuit the end terminals of such device to ground upon melting of such ring.

3,813,578

ELECTRICAL SAFETY BARRIER

Floyd L. Tiffany, Marshalltown, Iowa, assignor to Fisher Controls Company, Inc., Marshalltown, Iowa

Filed Jan. 3, 1973, Ser. No. 320,786
Int. Cl. H02h *3/20*
U.S. Cl. 317—16 **4 Claims**



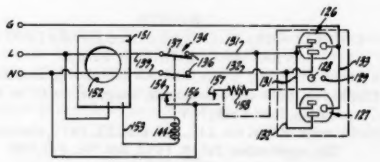
An electrical safety barrier for providing safe electrical interconnection between a safe area and a hazardous area. A circuit interconnects terminals for apparatus in the hazardous area. The circuit includes, in series, a diode, a current-limiting impedance, and current-interrupting means. Zener diodes, each of the same polarity, are connected on either side of the diode. Accordingly, the zener diodes provide independent fail-safe limiting of the voltage at the terminals in the hazardous area and yet can be independently tested.

3,813,579

ELECTRIC RECEPTACLE ASSEMBLY WITH GROUND FAULT PROTECTION

Richard C. Doyle, Orinda; Wallace W. Wahlgren, Oakland, and Ellwood S. Douglas, Orinda, all of Calif., assignors to The Rucker Company, Oakland, Calif.

Continuation-in-part of Ser. Nos. 87,713, Nov. 9, 1970, abandoned, and Ser. No. , , Continuation-in-part of Ser. No. 141,151, May 7, 1971, abandoned. This application July 14, 1972, Ser. No. 271,988
Int. Cl. H02h *3/26*
U.S. Cl. 317—18 D **18 Claims**



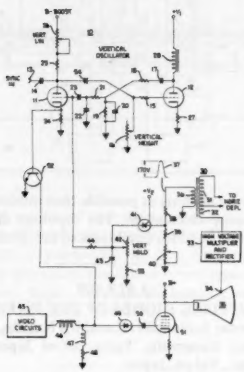
Electric receptacle assembly having a ground fault detector and current interrupter as an integral part thereof. The assembly is suitable for mounting in a standard receptacle box of the size commonly used for housing a double socket outlet, and it includes means for testing the operation of the system and means for providing a visual indication of the occurrence of a ground fault.

3,813,580

HIGH VOLTAGE PROTECTION CIRCUIT

Marvin Neil Norman, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 19, 1973, Ser. No. 325,772
Int. Cl. H02h 7/20
U.S. Cl. 317—23 5 Claims



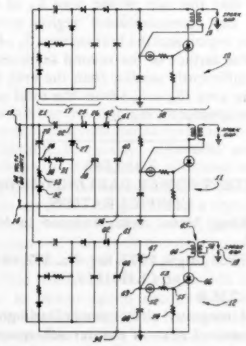
A high voltage protection circuit for a television receiver for rendering the picture unviewable when the kinescope ultor voltage exceeds a predetermined level. A voltage source representative of the ultor voltage is sensed and causes a switch to operate when a predetermined level is exceeded. The switch controls the operation of the vertical oscillator to collapse the raster under excessive high voltage conditions. The oscillator state also controls the video blanking circuit to cause video blanking during the alarm condition.

3,813,581

SPARK IGNITER FOR A PLURALITY OF GAS BURNERS

William Lloyd Hewitt, Harbor City, Calif., assignor to Cam-Stat Incorporated, Los Angeles, Calif.

Filed Sept. 21, 1973, Ser. No. 399,368
Int. Cl. F23q 3/00
U.S. Cl. 317—96 5 Claims



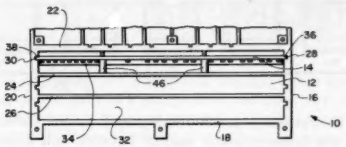
A spark ignition system for a plurality of gas burners providing for operation of a plurality of spark ignition circuits from one a.c. source, with each of the ignition circuits having a voltage multiplier feeding a pulsing circuit which in turn provides ignition pulses to the ignition electrodes, with an isolation diode between the voltage multiplier and pulsing circuit of each ignition circuit.

3,813,582

PRINTED CIRCUIT BOARD VIBRATION SNUBBER

Emanuel Gikow, West Long Branch, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 3, 1973, Ser. No. 347,603
Int. Cl. H02b 1/02
U.S. Cl. 317—101 DH 3 Claims



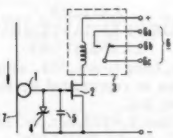
A printed circuit board that removably plugs into a metal chassis compartment and which supports circuitry whose performance is degraded if the circuit board vibrates in place in the chassis compartment and which is stiffened by a cemented-on backing to resist vibration, and which is nonrepairable due to the presence of the cemented backing, is improved by rendering the cemented-on backing excess through the addition of vibration snubber means in the form of at least one pin that projects through a perforation in the circuit board and is soldered to grounded metal cladding on one face of the circuit board, near its edge opposite that edge along which is mounted the plug-in terminals carried by the circuit board, the pin being designed to firmly abut the opposed partitions of the compartment in which the circuit board is nested.

3,813,583

YARN BREAK DETECTION SYSTEM

Tadashi Akiyama, Yokohama, Japan, assignor to Yamatake-Honeywell Company Limited, Tokyo, Japan

Filed Jan. 29, 1973, Ser. No. 327,375
Claims priority, application Japan, Jan. 28, 1972, 47/10320
Int. Cl. H01h 47/32
U.S. Cl. 317—148.5 B 5 Claims



A yarn break detector having a collecting electrode type sensor to which a continuously moving yarn is lightly contacted. A gate electrode of a field effect transistor is connected to the sensor and a relay circuit is connected in series to a drain electrode of the transistor. Normally, the field effect transistor of high input impedance is operated to its one condition by the collected electric charges from the continuously moving yarn. When the yarn break or cutting off occurs, the collected charges on the sensor disappear and then the field effect transistor is changed into its other condition, thereby the relay circuit produces an alarm signal.

3,813,584

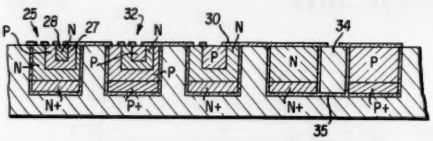
SOLID STATE INTEGRATED CIRCUITS

Uryon S. Davidsohn, deceased, late of Scottsdale, Ariz.; Amil J. Ajamie, administrator, 3550 N. Central, 705, Phoenix, Ariz. 85012; John P. Short, 207 Marion; Clyde Combs, Jr., 499 Cinnamon Dr., both of Satellite Beach, Fla. 32937, and Edward E. Guerra, 1983 Downing Ct., Santa Clara, Calif. 95051

Division of Ser. No. 374,132, June 10, 1964, abandoned. This application Oct. 10, 1972, Ser. No. 296,346

Int. Cl. H01l *19/00*

U.S. Cl. 317—235 D 8 Claims



A dielectrically isolated integrated circuit containing at least one polycrystalline resistor between and dielectrically isolated from adjacent single crystal semiconductor islands.

3,813,585

COMPOUND SEMICONDUCTOR DEVICE HAVING UNDERCUT ORIENTED GROOVE

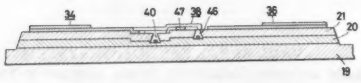
Yasuo Tarui; Yoshio Komiya, both of Tokyo, and Yasoo Harada, Aichi-ken, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Apr. 27, 1971, Ser. No. 137,807

Claims priority, application Japan, Apr. 28, 1970, 45-35904; Sept. 14, 1970, 45-80325

Int. Cl. H01l *19/00*

U.S. Cl. 317—235 R 15 Claims



A compound semiconductor device is provided with at least one inwardly splayed groove by a method of etching which takes into account the crystal orientation of the semiconductor material.

3,813,586

MATCHED PAIR OF ENHANCEMENT MODE MOS TRANSISTORS

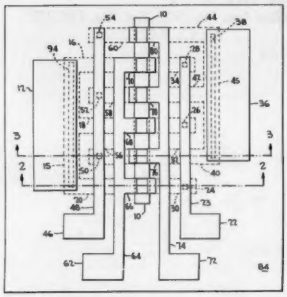
Michael E. Conner, Long Green, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 7, 1973, Ser. No. 338,794

Int. Cl. H01l *11/00*

U.S. Cl. 317—235 R 7 Claims

A method and apparatus for matching the DC current-voltage characteristics of two MOS enhancement mode transistors. The method interdigitates pieces of two transistors in such a way that the average characteristic of the two transistors is the same while conserving as much area as possible. The matching of the average characteristic of the two transistors is due to a topological layout that preserves the gates of the transistors in close proximity to one another. The gate oxide for both transistors is deposited in one long continuous strip. The gate electrodes for the two devices are divided into several parallel connected pieces. The pieces of each gate are deposited in alternating positions along the length of the gate oxide. The interconnection of the gates, sources, and drains are then made in such a way so as to keep



the diffused viae as short as possible thus minimizing the series drain and source resistances. The topology disclosed herein also obviates the need for two layers of metalization.

3,813,587

LIGHT EMITTING DIODES OF THE INJECTION TYPE

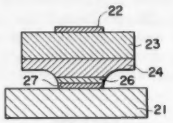
Jun-Ichi Umeda; Junio Aiki; Kazuhiro Kurata, all of Hachioji, and Hazime Kusumoto, Tama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 4, 1973, Ser. No. 357,088

Claims priority, application Japan, May 4, 1972, 47-43606

Int. Cl. H05b *33/00*

U.S. Cl. 317—235 N 16 Claims



In a PN junction light emitting diode of the injection type comprising a first semiconductor region having a forbidden band width equal at most, to the width of a PN junction forbidden band, a second semiconductor region having a forbidden band width greater than the width of a PN junction forbidden band, and at least one pair of electrodes affixed to each of a P conductive region and an N conductive region, the light extraction efficiency can be greatly increased by constructing the diode so that the sum of the area S_A of the boundary between the first semiconductor region and the second semiconductor region and the bottom area S_C of the electrode mounted on the surface of the second semiconductor region ($S_A + S_C$) is sufficiently smaller than the area S obtained by subtracting the area ($S_A + S_C$) from the total surface area of the second semiconductor region.

3,813,588

EFFICIENT POWER DARLINGTON DEVICE CONFIGURATION

Charles M. Ring, Mesa, Ariz., assignor to Motorola, Inc., Chicago, Ill.

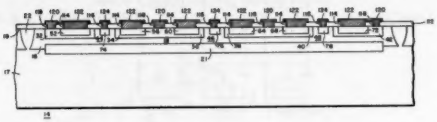
Filed July 9, 1973, Ser. No. 377,484

Int. Cl. H01l *19/00*

U.S. Cl. 317—235 R 5 Claims

An efficient integrated circuit power Darlington device having first and second rows of emitter subregions. The power Darlington device is substantially elongated, and an elongated collector contact region extends along one side thereof, contacting an extending portion of an elongated buried layer region. In the output power transistor a ballast resistor is posi-

tioned between each pair of emitter subregions in the second row, and each of the emitter subregions of a pair is connected to one end of the ballast resistor therebetween, the other end of the ballast resistor being connected to the emitter terminal. A ballast resistor is positioned adjacent each emitter subregion in the first row. Each emitter subregion in the second row is connected to one end of the adjacent ballast resistor, the other end of which is connected to the emitter terminal. The



base preohmic region of the output transistor substantially surrounds each of the emitter subregions. The emitter of the input transistor is connected to the base of the output transistor. Low saturation resistance, short base metallization extensions, and high thermal dissipation efficiency are achieved by the structure, providing a device with very high safe operating area.

3,813,589

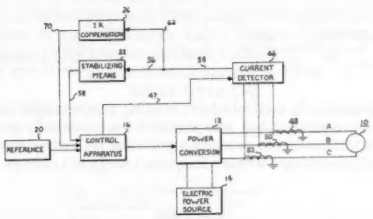
STABILIZING MEANS FOR AN A-C MOTOR DRIVE

William Knight Boice, Erie, Pa., assignor to General Electric Company, Erie, Pa.

Division of Ser. No. 262,269, June 13, 1972. This application July 19, 1973, Ser. No. 380,597

Int. Cl. H02p *5/40*

U.S. Cl. 318—227 **6 Claims**



An a-c adjustable speed motor drive system including an a-c motor and power conversion means for converting d-c electric power to adjustable frequency, adjustable voltage electric power for delivery to the motor is provided with stabilizing means for damping motor speed oscillations. The stabilizing means includes apparatus for generating a signal proportional to the component of actual motor current that is in phase with the motor voltage and feedback means responsive to the in-phase signal for generating a stabilizing signal proportional to and phase shifted with respect to oscillations in the in-phase signal related to motor speed oscillations. The stabilizing signal is supplied to and utilized by the control apparatus for the power conversion means to adjust either the output frequency or the output voltage of the power conversion means. The feedback means includes resistive and capacitive elements connected in series between the in-phase signal generating apparatus and the control apparatus.

3,813,590

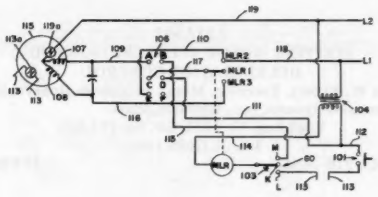
AUTOMATIC REVERSING CONTROL EQUIPMENT

John W. Ellmore, West Chester, Pa., assignor to Allister Manufacturing Company, Inc., Exton, Pa.

Filed Aug. 31, 1973, Ser. No. 393,283

Int. Cl. H02p *1/42*

U.S. Cl. 318—266 **14 Claims**



Control equipment for a reversible electric motor for driving a mechanism such as a garage door operator. The control equipment includes a pressure responsive device for moving a movable switch element between first and second motor energizing positions in a circuit. The movable switch element in one of the circuit positions conditions the motor for operation in one direction, and in the other of the circuit positions conditions the motor for operation in another direction. The equipment further includes a relay normally selectively energizable by an operator controlled switch to alternately complete first or second motor energizing circuit paths, depending upon the position of the switch element, to permit movement of the mechanism in the direction desired. In order to reverse the door when it encounters an obstruction, a circuit is provided to the relay which bypasses the operator controlled switch. The pressure responsive device first operates a bypass switch in the bypass circuit and then moves the aforesaid movable switch element to the one of its positions which conditions the motor for operation in a direction reversed to the direction in which the motor was operating at the time the obstruction was encountered. Simultaneously, the movable switch element closes contacts which complete the bypass circuit, thereby energizing the relay to complete the motor circuit causing the motor to operate in the reverse direction. Means are provided for disabling the bypass switch, thereby preventing energization of the relay via the bypass circuit at limits of door travel. First and second thermal cutouts are provided for controlling operation of the motor.

3,813,591

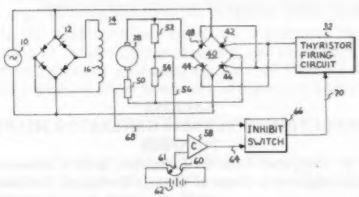
DC MOTOR SPEED CONTROL CIRCUIT

Edward H. Dinger, Waynesboro, Va., assignor to General Electric Company, Salem, Va.

Filed Mar. 6, 1973, Ser. No. 338,615

Int. Cl. H02p *5/00*

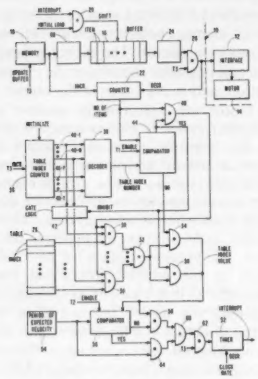
U.S. Cl. 318—331 **6 Claims**



A d.c. motor control circuit of the type employing phase controlled semiconductor devices of the controlled rectifier type is provided with suitable feedback means respecting

motor operation. A full wave controlled rectifier bridge supplies power to the motor armature winding from an a.c. source and means are provided for adjusting the phase angle of controlled rectifier firing in response to an error signal derived from true back emf of the motor.

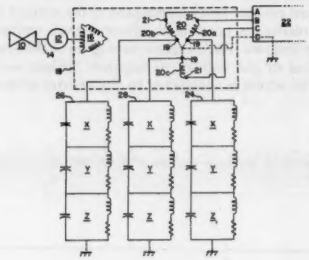
3,813,592
STEPPING MOTOR ACCELERATION AND DECELERATION CONTROL
Arlen W. Ryberg, Excelsior, Minn., assignor to Honeywell Information Systems, Inc., Waltham, Mass.
Filed Aug. 12, 1971, Ser. No. 171,219
Int. Cl. G05b *19/40*
U.S. Cl. 318—696 **27 Claims**



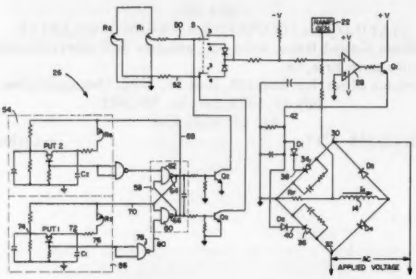
A digital computer is programmed to control the acceleration and deceleration of a stepping motor. A buffer is utilized to indicate the number of times the motor is to be stepped during a specified movement of the motor. A table is utilized to indicate selected periods of time between steps of the motor in order to achieve a selected rate of change of the motor's velocity. The number of the means for indicating, which number is indicative of the number of times the motor remains to be stepped, and the addressed location of the table are updated each time the motor is stepped. Repeated steps of the motor are made after waiting a period of time corresponding to the table location addressed. The motor accelerates, decelerates or rotates at a constant speed depending on the change or lack of change of the table location used.

3,813,593
REDUCTION OF TURBINE GENERATOR SHAFT TORQUES
James B. Tice, and Colin E. J. Bowler, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed May 4, 1973, Ser. No. 357,127
U.S. Cl. 321—9 R **8 Claims**

The invention discloses a new and improved means for attenuating and modifying sub-synchronous frequencies in a power transmission system through the use of a power filter comprising a plurality of serially connected, mutually coupled, parallel resonant circuits, wherein the individual parallel resonant circuits are tuned. A power filter is inserted serially in one side of each phase of the power transmission system.

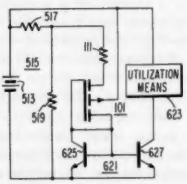


3,813,594
MAGNETICALLY CONTROLLED POWER SUPPLY HAVING PULSATING OUTPUT CURRENT CONTROL
Tibor Endre Toth, Florence, S.C., assignor to Union Carbide Corporation, New York, N.Y.
Filed Apr. 24, 1973, Ser. No. 353,964
Int. Cl. H02m *7/20*
U.S. Cl. 321—18 **5 Claims**



A magnetically controlled arc working power supply having a current control circuit with means for automatically pulsing the control current to produce a pulsating DC output current at an adjustable rate within a frequency range of 1–20 cps.

3,813,595
CURRENT SOURCE
Abel Ching Nam Sheng, Morris Plains, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Mar. 30, 1973, Ser. No. 346,672
Int. Cl. G05f *5/00*
U.S. Cl. 323—4 **16 Claims**



An MOS field-effect transistor having its gate electrode connected to its drain electrode can be used to operate as a

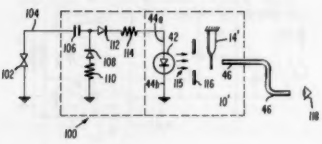
constant current device by means of a resistive network placed between its source and substrate electrodes.

3,813,596

MAGNETIC REED SENSOR SUITABLE FOR USE IN IGNITION TIMING SYSTEMS

Leonard Robin Hulls, Marblehead, Mass., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 30, 1973, Ser. No. 346,670
Int. Cl. G01r *13/42*; G01m *15/00*
U.S. Cl. 324—16 R **3 Claims**



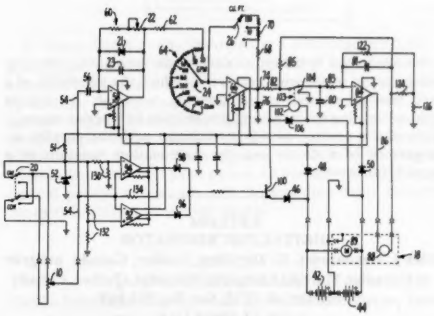
A magnetic reed sensor comprises a generally U-shaped permanent magnet having first and second end poles defining a gap of a given distance therebetween and establishing a magnetic flux path thereacross. A reed of flexible magnetic material is fixedly mounted at one end to a support with its other end forming a cantilever projection into the magnetic flux path wherein the flux path is normally symmetrically disposed about the reed. An external ferromagnetic material moved in proximity to said symmetric flux path, creates an unbalanced flux distribution which urges the reed toward one of the pole pieces. One embodiment includes a light source and a light pipe each mounted in opposite directions from the reed so that an optical path is completed between the light source and the light pipe in response to movement of the reed. The magnetic reed sensor then serves as a light shutter which is used in conjunction with an automotive engine to provide an optical indication of the relative timing of the engine.

3,813,597

TACHOMETER FOR LOW SPEED MEASUREMENT

Richard M. Le Vitt, Albany, Calif., assignor to East Bay Municipal Utility District, Oakland, Calif.

Filed Jan. 5, 1973, Ser. No. 321,398
Int. Cl. G01p *3/42*
U.S. Cl. 324—176 **5 Claims**



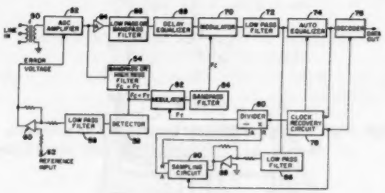
A tachometer is provided which is capable of detecting and/or recording very low rates of revolution. A typical application of the tachometer is described in conjunction with a flow rate recorder for a water meter.

3,813,598

SINGLE TONE CARRIER RECOVERY SYSTEM

Richard L. Stuart, Beltsville, Md., assignor to Rexon Electronics, Inc., Silver Spring, Md.

Filed Aug. 16, 1971, Ser. No. 172,090
Int. Cl. H04b *1/68*
U.S. Cl. 325—49 **11 Claims**



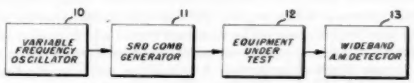
A data communication carrier recovery system wherein a single tone is added to the information spectrum to be transmitted to provide carrier recovery and "phase jitter" tracking. At the receiver, the transmitted spectrum is filtered to remove the tone prior to demodulation, demodulation being accomplished by multiplying the filtered signal by the recovered carrier to translate the spectrum back to baseband. The carrier is recovered by modulating the tone frequency by a subdivided recovered clock frequency. To provide jitter immunity the coherent carrier is made to exactly track the phase jitter by equalizing path delays so as to eliminate any variation in delay or phase between the recovered carrier and the carrier frequency present in the line signal. Three different carrier phase correction schemes are disc ssed.

3,813,599

BANDWIDTH MEASUREMENT SYSTEM

Kenneth J. Campbell, Solana Beach, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 4, 1973, Ser. No. 366,805
Int. Cl. H04b *1/00*
U.S. Cl. 325—67 **4 Claims**



A signal source producing signals of selectively determinable variations in repetition frequency drives a step-recovery diode circuit for generating signals having spectral frequency distributions varying in response to changes in the repetition frequency. The spectrally distributed signals are impressed upon the circuit under test and a wide band amplitude modulation detector is connected to the output of the circuit under test. As the pulse repetition frequency is gradually changed, the output of the detector is observed, and the highest pulse repetition frequency producing signals detectable by the detector is a measure of the bandwidth of the circuit under test.

3,813,600

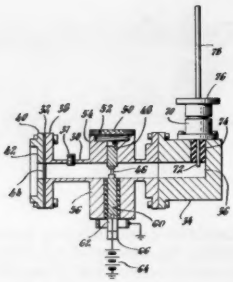
MODULATED MICROWAVE SOURCE

Leonard D. Cohen, Brooklyn, N.Y., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Aug. 31, 1971, Ser. No. 176,455
Int. Cl. H04b *11/00*
U.S. Cl. 325—126 **1 Claim**

A microwave modulator comprises a microwave resonant cavity having a relatively rigid wall and dimensions which

establish a microwave resonant frequency for the cavity, means for introducing energy at microwave frequencies to the cavity, an aperture formed in a cavity wall, and a wall member comprising a relatively thin, flexible body which extends continuously across the aperture and presents an electrically conductive surface to microwave energy. The body is positioned for deformation by an external exciting force which is applied



to an externally exposed surface of the body. The exciting force which deforms the flexible body causes a variation in the physical dimensions and in the resonant frequency of the cavity. The resonant frequency pre-established by the dimensions of the resonant cavity are therefore varied in accordance with the variations in the deformation of the body and microwave energy at the predetermined resonant frequency is modulated accordingly.

3,813,601

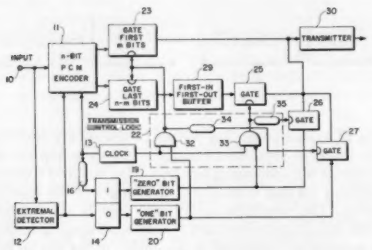
DIGITAL TRANSMISSION SYSTEM

Adole Reindl, Wayside, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 177,032, Sept. 1, 1971. This application Mar. 29, 1973, Ser. No. 346,196

Int. Cl. H04b *1/04*

U.S. Cl. 325—141 **5 Claims**



A digital transmission system which transmits quantized values of the extremal points of an analog wave. The system includes a PCM encoder and an extremal detector for generating n-bit binary coded representations of the input extremal voltages. During each clock period in which an extremal point is detected, m of the most significant PCM bits are transmitted along with a control bit to indicate that an extremal point was detected. Simultaneously the n-m least significant bits are stored in a first-in-first-out buffer. During clock periods in which an extremal point is not detected, a set of m bits are transmitted from the buffer along with a control bit which signifies that an extremal point was not detected in that clock period.

3,813,602

INPUT CIRCUIT FOR A TELEVISION TUNER

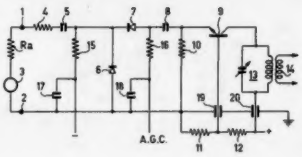
Adalbertus Hermanus Jacobus Nieveen Van Dijum, and Teunis Hermanus Uittenbogaard, both of Mollenhutseweg, Nijmegen, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed June 2, 1971, Ser. No. 149,188

Claims priority, application Netherlands, June 6, 1970, 7008273

Int. Cl. H04b *1/18*; H03f *1/00*

U.S. Cl. 333—81 R **7 Claims**



A television tuner having an AGC controlled PIN-diode attenuator between the aerial terminals and the first transistor. The attenuator is formed in such a manner that its output impedance in case of continuing control deviates to an increasing extent from the transistor input impedance so that a considerable improvement of the signal-to-noise ratio is obtained.

3,813,603

INTEGRATED THRESHOLD CIRCUIT FOR STAGES WITH DIFFERENT CONTROL RANGES

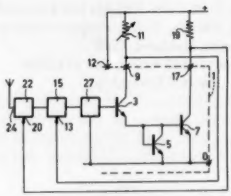
Adriaan Cense, and Jan Van Straaten, both of Nijmegen, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 22, 1972, Ser. No. 228,169

Claims priority, application Netherlands, Mar. 6, 1971, 7103018

Int. Cl. H04b *1/16*

U.S. Cl. 325—319 **5 Claims**



An integrated threshold circuit for an automatic gain control circuit in a television receiver in which the possibility of a very limited number of connecting terminals is created without limiting the adjusting possibilities by a series arrangement of the emitter of a first transistor with the parallel arrangement of a diode and the base-emitter junction of a second transistor.

3,813,604

DIGITAL DISCRIMINATOR

Gilles J. Denoncourt, St. Dorothee, Quebec, Canada, assignor to Canadian Marconi Company, Montreal, Quebec, Canada

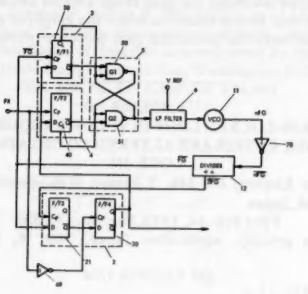
Filed Oct. 4, 1972, Ser. No. 294,968

Int. Cl. H03d *3/18*

U.S. Cl. 329—122 **1 Claim**

The disclosure relates to a phase and frequency discriminator which is especially adaptable to digital communication receiver systems. The discriminator consists of a duty cycle generator having two input terminals. Each one of the terminals is fed from a different pulse generator, and one of the

pulse generators is activated by the input signal while the other is activated by the second input signal. One of the pulse generators activates the duty cycle generator while the other one deactivates it. Thus, the output of the duty cycle generator is a signal whose duty cycle is proportional to the phase



relation between the two signals. In accordance with the disclosure, if the second signal is derived from a VCO whose input is controlled by the duty cycle, the second signal is brought into phase and frequency synchronism with the first signal.

3,813,605

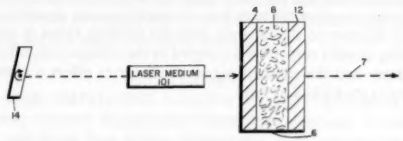
BISTABLE OPTICAL DEVICE

Abraham Szoke, Tel Aviv, Israel, assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Division of Ser. No. 93,548, Nov. 30, 1970, abandoned. This application Nov. 7, 1972, Ser. No. 304,493

Int. Cl. H01s 3/05

U.S. Cl. 330—4.3 **2 Claims**



A Fabry-Perot cavity containing a saturable absorber is placed in combination with a parallel monochromatic coherent light source, a laser, such that the light beam emitted by the laser impinges on a reflecting mirror of the cavity. For a certain range of laser intensities there are two possible values of the output of the Fabry-Perot cavity thereby forming a bistable optical device. This apparatus is utilized to generate short pulses with high peak power, to produce variable length optical pulses, and to perform logical operations including memory functions on optical signals.

3,813,606

TRANSISTOR CIRCUIT

Yoshio Sakamoto, and Shinsuke Iguchi, both of Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

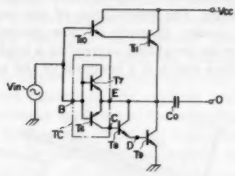
Filed June 30, 1972, Ser. No. 268,078

Claims priority, application Japan, July 9, 1971, 46-59538

Int. Cl. H03f 3/18

U.S. Cl. 330—13 **10 Claims**

A transistor circuit suitable for a quasi-complementary circuit comprises first and second lateral type PNP transistors wherein both the emitter electrodes are connected in common, both the base electrodes are connected with the collector electrode of the second transistor, and an input signal is applied to the base electrodes.



3,813,607

CURRENT AMPLIFIER

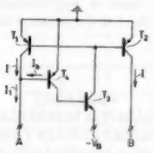
Johannes Otto Voorman, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Phillips Corporation, New York, N.Y.

Filed Oct. 18, 1972, Ser. No. 298,760

Claims priority, application Netherlands, Oct. 21, 1971, 7114470

Int. Cl. H03f 3/18

U.S. Cl. 330—17 **9 Claims**



Circuit arrangement providing a constant current amplification which is determined by the ratio between the emitter surface areas of a first and a second transistor of one conductivity type, the first transistor passing the input current and the second transistor passing the output current. The base currents for these transistors are supplied by a third transistor of the other conductivity type the base of which is connected to the collector of a fourth transistor of the one conductivity type in common emitter connection the base of which is connected to the input. This method of driving ensures a high degree of accuracy and also permits the use of a small supply voltage. The circuit may be used to particular advantage in a current stabilizer.

3,813,608

AMPLIFIER DEVICE

Maurice Weiner, Ocean Township; John L. Carter, Ocean, and Sol Schneider, Little Silver, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

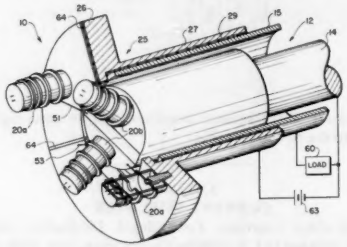
Filed Mar. 6, 1973, Ser. No. 338,477

Int. Cl. B03f 3/10

U.S. Cl. 330—34 **7 Claims**

An electron beam semiconductor amplifier device having at least one array of parallelly connected, back-biased semiconductor target diodes of impedance low compared with that of the amplifier load disposed along a wave energy transmission means at a region thereof of impedance substantially equal to that of each of the target diodes. Each diode is disposed within a separate electron discharge device which further contains an electron gun and beam modulating means for directing a high energy, current-modulated electron beam onto said enclosed target diode. Each said electron discharge device has a portion extending externally of the grounded envelope for removably

mounting said electron discharge device to an enlarged portion of one of the conductors of the transmission means. The beam electrons from each separate electron discharge device penetrate into the depletion region of the diode adjacent the bombarded surface. The interaction of the beam with the semiconductor diodes in each of the electron discharge devices produces an amplified current in a load circuit common to said diodes which is a function of the electron beam



current in that electron discharge device. Wave energy generated by the current induced in each of the diodes by the impinging electron beam in the several electron discharge devices propagates along the transmission means to the load. The impedance of the transmission means can be varied progressively as the load is approached, to facilitate impedance matching of the low impedance diodes and the amplifier load.

3,813,609

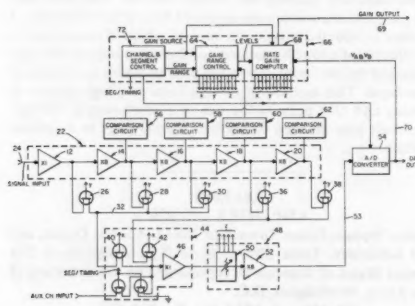
MULTIPLE STAGE SAMPLE NORMALIZING AMPLIFIER WITH AUTOMATIC GAIN PREDICTION

Don Earl Wilkes, Houston; Charles Larry Thompson, Stafford, and Alan Fred Sedgwick, Houston, all of Tex., assignors to Petty-Ray Geophysical, Inc., Houston, Tex.

Filed Nov. 27, 1972, Ser. No. 309,653

Int. Cl. H03g *3/22*

U.S. Cl. 330—51 **18 Claims**



A series of fixed gain amplifier stages is selectively coupled by respective electronic switch means to pick-off amplifier means A comparison circuit is coupled between the output of each amplifier stage and amplifier control means. The amplifier control means includes a gain range control circuit which allows the amplifier to gain range continuously during selected portions of a given channel time period, i.e., continuously which selects the highest possible amplifier gain at which the amplifier output is in a linear region. The stages are continuously and selectively coupled to the pick-off amplifier means by the electronic switch means, in response to the gain range control circuit. The control means further includes a rate gain computer circuit coupled to the gain range control circuit and to an analog-to-digital converter, wherein the rate gain computer circuit provides gain prediction means for determining the gain of the amplifier at a subsequent selectable data sample time or times. The amplifier is allowed to gain range in response to the gain range control circuit prior to performing the gain prediction process, whereupon the rate gain computer circuit overrides the gain range control circuit and sets the electronic switch means to select the amplifier stage commensurate with the predicted gain prior to taking the data sample.

3,813,610

PHASE-LOCKED LOOP IN WHICH FREQUENCY DIVIDER RATIOS ARE ALTERED TO OBTAIN RAPID LOCK-IN

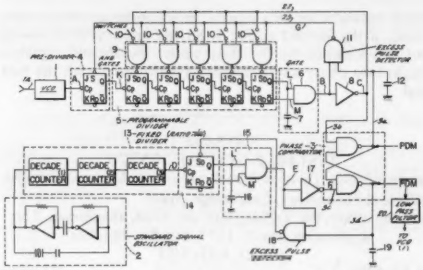
Masahiro Kimura, 6-1-246, 2 chome, Wakamatsu-Cho, Funabashi, Japan

Filed Feb. 14, 1973, Ser. No. 332,339

Claims priority, application Japan, Mar. 8, 1972, 47-023859

Int. Cl. H03b *3/04*

U.S. Cl. 331—1 A **10 Claims**



A phase locked loop for maintaining a voltage controlled oscillator within the locked-in range by means of excess pulse detectors provided for both high or low frequency deviations which function to significantly alter the dividing ratios of the dividing circuits respectively coupled to the voltage controlled oscillator and the standard signal oscillator to effect a rapid return to the locked-in state.

3,813,611

METHOD AND DEVICE FOR THE REALIZATION OF A NON-LINEAR RELEASE OF ENERGY IN HIGH POWER LASERS

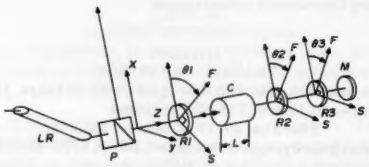
Lars Erik Dahlstrom, Royal Institute of Technology, 100 44 Stockholm, Sweden

Filed Nov. 3, 1972, Ser. No. 303,346

Claims priority, application Sweden, Nov. 5, 1971, 14132/71

Int. Cl. H01s *3/11*

U.S. Cl. 331—94.5 Q **8 Claims**



Several embodiments of a device for the non-linear release of energy from a laser cavity of the high power type is

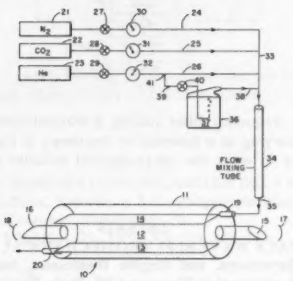
described. In each a laser is connected to a release unit which includes a Glan prism, a Kerr-active medium and several retardation elements arranged to achieve the intended purpose.

3,813,612

METHOD AND APPARATUS FOR ENHANCING ELECTRICAL DISCHARGES IN GAS LASERS

Richard L. Schriever; Harold R. Johansen, both of Livermore, and Richard E. Sandy, Stevinson, all of Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Jan. 18, 1973, Ser. No. 324,601
Int. Cl. H01s 3/22
U.S. Cl. 331—94.5 G **8 Claims**



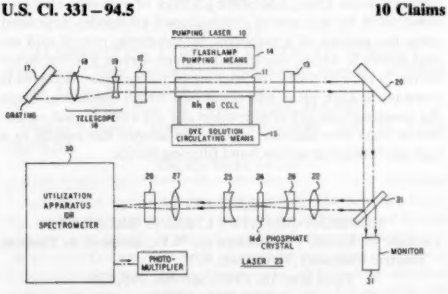
A method and apparatus for enhancing electrical discharges in gas lasers by adding small amounts of a low ionization potential gas to the main lasing gas mixture. The additive does two things: (1) allows a d.c. high pressure discharge, and (2) allows enhanced pulsed operation (i.e., double discharge). The enhancement method is particularly applicable to double discharge gas lasers utilizing gaseous lasing mixture of $He/N_2/Co$, for example, at atmospheric pressures, wherein the addition of an organic gas additive to the lasing mixture suppresses arcing and increases current. The method is carried out by metering small amounts of the additive into a flowing stream of lasing gaseous media, or by addition of the additive gas to a static volume of lasing gas.

3,813,613

LASER EMPLOYING A METALLIC PENTAPHOSPHATE

Hans Guenter Danielmeyer, Baden-Wurttemberg, Germany, and Heinz Paul Weber, Middletown, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 220,448, Jan. 24, 1972, abandoned. This application Apr. 2, 1973, Ser. No. 347,189
Int. Cl. H01s 3/16
U.S. Cl. 331—94.5 **10 Claims**



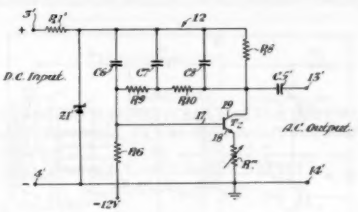
There are disclosed various embodiments of a laser in which the dielectric active medium is a rare earth pentaphosphate, for example, neodymium pentaphosphate. The neodymium pentaphosphate laser uses a crystal that is smaller than would be physically possible in prior art neodymium lasers. Another laser of this type employs a mixed crystal of neodymium pentaphosphate and lanthanum pentaphosphate and has the unusual property that no resonator is needed other than its naturally grown end surfaces. Both pulsed and continuous-wave lasers of this type have been operated. The crystals useful in the new lasers are practically insoluble in the more common solvents, are typically transparent from the ultraviolet into the far infrared except for the metal's absorption bands and have higher fluorescence efficiencies and narrower linewidths than would be expected for materials with such a high concentration of fluorescent ions.

3,813,614

A FAIL-SAFE R-C PHASE SHIFT OSCILLATING TYPE OF LEVEL DETECTOR

John O. G. Darrow, Murrysville, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.

Division of Ser. No. 1,970, Jan. 12, 1970, , Continuation of Ser. No. 706,914, Feb. 20, 1968, abandoned. This application Sept. 7, 1972, Ser. No. 287,103
Int. Cl. H03b 5/20
U.S. Cl. 331—108 B **6 Claims**



A fail-safe level detector comprising a regenerative feedback oscillator and a voltage breakdown device interconnecting the output and common electrodes of the oscillator so that sufficient feedback for sustaining oscillations only occurs when a D.C. input causes the breakdown device to conduct and to assume its low dynamic impedance condition.

3,813,615

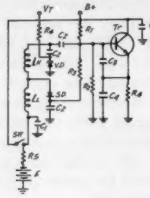
LOCAL OSCILLATOR FOR TELEVISION TUNER HAVING REDUCED OSCILLATION VOLTAGE VARIATION BETWEEN HIGH AND LOW FREQUENCY BANDS

Mitsunari Okazaki, Soma, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed July 13, 1973, Ser. No. 379,115
Claims priority, application Japan, July 28, 1972, 47-75683
Int. Cl. H03b 3/02, 5/12
U.S. Cl. 331—109 **11 Claims**

A local oscillator circuit for a television tuner or the like includes a transistor and an oscillatory circuit connected thereto. Selector means are connected to the oscillatory circuit to cause the oscillatory circuit to operate at low and high band frequencies respectively. Separate biasing means are provided to bias the transistor at first and second voltage levels respectively, and bias control means are connected to the selector means to connect the appropriate biasing means to the transistor when the selector means adapts the oscillatory circuit to operate at a high band or a low band frequency. The bias control means comprises a switching diode connected between ground and the dividing point of high and low frequency band coils of the oscillatory circuit. A negative volt-

age source is connected through a high resistance to an end of the low band coil. The selector means comprises a switch controlled by the channel selector shaft of the tuner and is



disposed between the end of the low band coil and a power source to control the switching diode such that the transistor bias voltage is regulated in accordance with the mode of operation of the circuit.

3,813,616

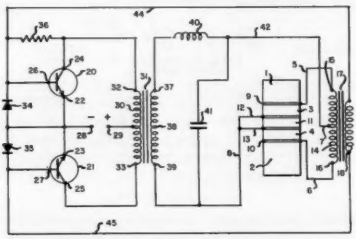
ELECTROMECHANICAL OSCILLATOR

John N. Antonevich, Jamestown, N.Y., assignor to Blackstone Corporation, Jamestown, N.Y.

Filed Mar. 22, 1973, Ser. No. 343,846

Int. Cl. H03b *5/36*

U.S. Cl. 331—116 R **5 Claims**



An electromechanical oscillator comprises an electronic amplifier driving an electromechanical transducer which includes a pair of like transducer units affixed to a bar having with the transducers natural frequencies of vibration. The units are affixed so that one of them is nearer a node than the other. An impedance is connected in series with each transducer unit, and the two series circuits are connected in parallel. The voltage across the two transducer unit-impedance junctions is fed back into the input of the electronic amplifier.

3,813,617

FREQUENCY TO AMPLITUDE MODULATED WAVE CONVERTER

Pierre J. Blancheville, Courbevoie; Guy Brun, Rennes, and Pham Tat Dat, Bagneux, all of France, assignors to Office De Radiodiffusion-Television Francaise, Paris, France

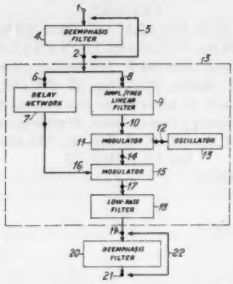
Filed Feb. 23, 1973, Ser. No. 335,299

Claims priority, application France, Feb. 28, 1972, 72.06662

Int. Cl. H03c *1/00*

U.S. Cl. 332—31 R **8 Claims**

A device for direct conversion of a frequency-modulated wave having a zero-modulation frequency f_1 into an amplitude-modulated wave having a carrier frequency f_o. It comprises two circuits having a common input, the first of which includes a first amplitude modulator carrier-supplied by a local oscillator of frequency f_o and has its output fed to one of the inputs of a second amplitude modulator, the other output of which receives signals from said common input through the second of said circuits. The output of the second modulator is connected to a load circuit through a low-pass filter. The device is further characterized in that one of said circuits in-



cludes a frequency filter having a transmission coefficient linearly varying as a function of frequency in the vicinity of frequency f_1, while the other channel includes a delay network.

3,813,618

SURFACE WAVE ELECTROMECHANICAL FILTER

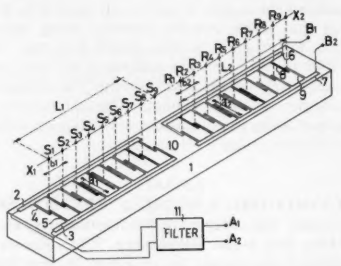
Pierre Hartemann, and Eugene Dieulesaint, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed July 13, 1972, Ser. No. 271,231

Claims priority, application France, July 16, 1971, 71.26189

Int. Cl. H03h *9/26*

U.S. Cl. 333—72 **7 Claims**



The invention relates to a narrow band surface wave electromechanical filter, comprising arrays of radiator elements constituted by two sets of comb-shaped electrodes deposited upon the surface of a piezoelectric substrate; one of said arrays serves to excite vibrational surface waves, and the other serves to receive them; the spacing of the radiator elements is constant in each array and equal to a whole number of times the mean wavelength of operation and are either equal, or different from one another, in the two arrays; this results in a high performance narrow band filtering device.

3,813,619

CURRENT-LIMITING CIRCUIT BREAKER

Leonide P. Koval, Far Rockaway, N.Y., assignor to General Electric Company, New York, N.Y.

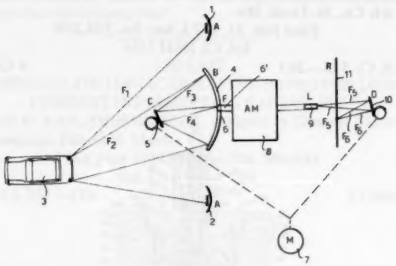
Filed May 18, 1962, Ser. No. 195,739

Int. Cl. 401h *81/04*

U.S. Cl. 335—16 **4 Claims**

A circuit breaker including means for causing opening of the circuit therethrough upon the occurrence of (1) overload

current conditions existing for a predetermined time, and (2) minor short-circuit conditions, and also including means



providing a current-limiting action upon the occurrence of predetermined short-circuit conditions above a predetermined level.

3,813,620

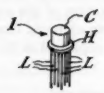
MICROMINIATURE POLARIZED RELAY

Russell M. Adkins, Batesburg, S.C., assignor to Westinghouse Air Brake Company, Swedesvale, Pa.

Filed Nov. 21, 1972, Ser. No. 308,494

Int. Cl. H01h *51/27*

U.S. Cl. 335—78 **10 Claims**



A microminiature polarized relay for sensing a given polarity of voltage includes an electromagnet and a pivotal armature movable between a first and a second position.

The above change was made only to improve the form of the case. The electromagnet includes a magnetic frame, a core member, an energizable coil, and a magnetic shunt. Normally, the magnetic shunt exhibits a low value of reluctance when the coil of the electromagnet is not energized by the given polarity of voltage so that the armature normally assumes the first position. However, the magnetic shunt exhibits a high value of reluctance when the coil of the electromagnet is energized by the given polarity of voltage so that the armature moves to its second position. The movement of the armature causes the positions of a plurality of movable and stationary contacts to change so that a transfer switching action occurs.

3,813,621

ALTERNATING-CURRENT PROTECTIVE DEVICE

Alex Blum, Suhr, Switzerland, assignor to Sprecher & Schuh AG, Aarau, Switzerland

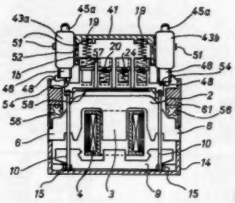
Filed Aug. 29, 1973, Ser. No. 392,787

Claims priority, application Switzerland, Oct. 16, 1972, 15071/72

Int. Cl. H01h *51/30*

U.S. Cl. 335—99 **8 Claims**

An alternating-current protective device comprising a housing, and a series of contact elements fixedly arranged in said housing, said fixedly arranged contact elements having movable contact bridges. A traverse serves for actuating said movable contact bridges. There is provided at least one separate contact element incorporating a contact element housing and a movable contact bridge. A plunger extends out of the contact element housing for actuating the movable contact bridge of said separate contact element. The separate contact element is positionable in the protective housing in a first position and in a second position turned through 180° with respect to the first position. The plunger of the separate contact element bears against an impact surface of the traverse. The plunger has two end surfaces arranged behind one another to define a front end surface and a rear end surface. These end surfaces are arranged at the plunger with respect to the impact



surface such that in the one position of the separate contact element the front end surface bears against the impact surface of the traverse for the early actuation of the separate contact element and in the other position of said separate contact element the rear end surface bears against the impact surface of the traverse for the late actuation of such separate contact element.

3,813,622

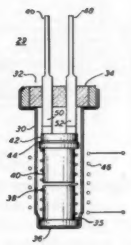
AXIAL MOTION MAGNETICALLY ACTUATED SWITCH

Richard C. Remington, 10 Van Riper Ave., Pompton Plains, N.J. 07444

Filed Jan. 9, 1973, Ser. No. 322,107

Int. Cl. H01h *51/28*

U.S. Cl. 335—151 **1 Claim**

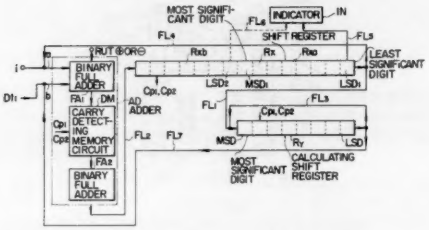


An axial motion switch which consists of a magnetic material armature attached to an end cap of a sealed vessel by means of a spring, flexible contact wire, or the like. The other end of the sealed vessel is provided with a magnetic, internally extended end cap which forms a pair of contacts with the free end of the armature. The two end caps are electrically insulated from each other by using a vessel of insulating material, such as glass or a metal vessel suitably insulated from the end caps. When the vessel is placed in a magnetic field of correct orientation, the armature is attracted axially by mutual magnetic pole induction to the internally extending end cap and the contact therebetween causes a low electrical resistance path to exist between the end caps of the switch device.

3,813,623
SERIAL BCD ADDER

Kosei Nomiya, and Takao Tsuiki, both of Tokyo, Japan, assignors to Hitachi Ltd., Tokyo, Japan

Filed Dec. 21, 1972, Ser. No. 317,303
Claims priority, application Japan, Dec. 24, 1971, 46-104579
Int. Cl. G06f 7/50
U.S. Cl. 235—176 9 Claims

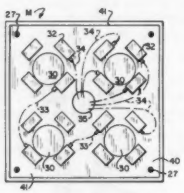


A digital processing system wherein a binary-coded decimal full adder forms along with a display shift register a loop-like circuit for circulating information signals. The system provides a series synchronism system which reduces the number of circuit elements.

3,813,624
MAGNETIC LOCK SWITCH

Ronald S. Deitch, 7695 E. Quincy, Apt. No. 207, Denver, Colo. 80237

Filed Apr. 9, 1973, Ser. No. 349,488
Int. Cl. H01h 41/14
U.S. Cl. 335—206 15 Claims

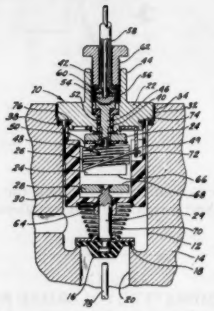


A magnetic lock switch for closing a circuit by means of a magnetic key. The switch is formed as a small packet having a flat face plate at one side. A plurality of shiftable magnets are carried within this packet adjacent to the face plate and each magnet is surrounded by a group of posts. A selected pair of adjacent posts in each group is electro-conductive and is connected to circuit wires. The magnet is electro-conductive at least at its peripheral edge so that whenever it is shifted to engage the two selected posts, it will act as a switch to close the circuit. By selecting various pairs of posts at the different magnet positions, a number of lock combinations are possible. The key is a flat member adapted to lie alongside the face plate of the packet and includes a magnetic component within it for each shiftable magnet within the packet. These components are located to shift the magnets to circuit closing positions.

3,813,625
ELECTROMAGNET WITH DETACHABLE CASTING AND NON-ROTATABLE ARMATURE

Howard R. Kinsella, St. Louis, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Feb. 21, 1973, Ser. No. 334,258
Int. Cl. H01f 7/16
U.S. Cl. 335—263 6 Claims

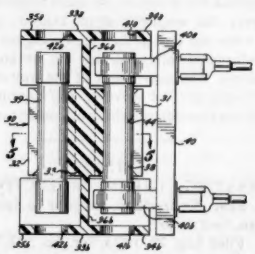


A thermocouple-energized electromagnet having a casing comprising a metal base and a molded plastic cover detachably connected thereto and conveniently removable to permit cleaning of the armature and pole faces. A yoke and winding are fixed to the base and a non-circular armature is slidably mounted in the cover. A non-circular interior cover wall surface prevents rotation of the armature, and a recess in the cover wall receives an element fixed to the base to insure that the cover is always replaced in the same angular relation to the yoke.

3,813,626
FUSE RETAINER AND EXTRACTOR

Henry A. Cetola, Yorba Linda, and Timothy J. Crosby, Anaheim, both of Calif., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Dec. 15, 1972, Ser. No. 315,327
Int. Cl. H01h 85/14
U.S. Cl. 337—245 9 Claims



A fuse holder constructed from a dielectric material which is also elastic or partly elastic, such as plastic, formed to provide a cylinder split longitudinally and chamfered at either end to receive a cartridge fuse, such cylinder having attached thereto a handle to facilitate grasping of the fuse holder. At the distal ends, the handle extends to form insulating chambers partly surrounding the respective connector end caps of the fuse and opening along one lateral surface thereof to receive the corresponding spring clips of a fuse clip. The distally opposite surfaces of the respective housings are pierced to form openings concentric with the axis of the

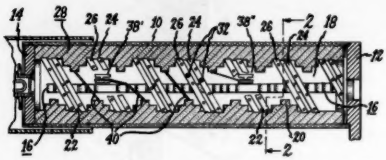
cylinder, said openings being sized to pass the fuse into the interior cavity of the cylinder. In another embodiment, the handle is formed to provide a second fuse holder substantially shaped in a similar manner as the first fuse holder, for holding a spare fuse for replacement.

3,813,627

CURRENT LIMITING FUSE HAVING IMPROVED LOW CURRENT INTERRUPTING CAPABILITY

Robert E. Koch, Pittsfield, Mass., assignor to General Electric Company, Pittsfield, Mass.

Filed June 11, 1973, Ser. No. 369,051
Int. Cl. H01h *85/38*
U.S. Cl. 337—274 **6 Claims**



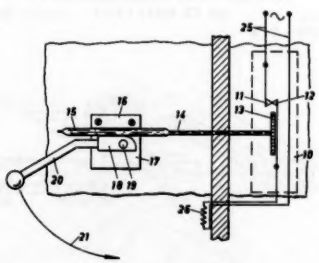
This current limiting fuse employs auxiliary spark gaps adjacent fusion points of at least one main fuse element for the purpose of reliably melting additional series arc gaps in that main fuse element when the fuse is subjected to a low magnitude overload current.

3,813,628

SAFETY DEVICE FOR SAUNA ROOMS

Sven Olof Janson, Svarvaregatan 6, 302 50 Halmstad, Sweden

Filed July 18, 1973, Ser. No. 380,226
Claims priority, application Sweden, July 18, 1972, 9426/72
Int. Cl. H01h *3/24*
U.S. Cl. 337—322 **5 Claims**



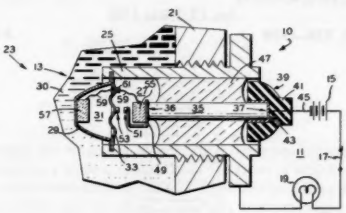
The control device for an electrically heated sauna room includes a liquid filled temperature sensing body located inside the sauna room and communicating with the control device proper located outside the room. The sensing body is made of elastically deformable material and may, in case of accident, be compressed by means of a lever, thus bringing about an immediate action upon the control device for breaking the current supply.

3,813,629

TEMPERATURE COMPENSATED FLUID LEVEL SENSOR

Nikolaus A. Szeverenyi, and David F. Thompson, both of Warren, Pa., assignors to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed Jan. 5, 1973, Ser. No. 321,133
Int. Cl. G08b *21/00*
U.S. Cl. 337—324 **8 Claims**



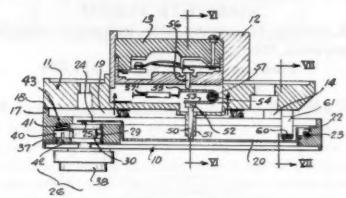
There is described an apparatus for detecting the presence or absence of fluid. The apparatus comprises an electrical circuit and a sensor device electrically joined to the circuit. The sensor device comprises a housing member defining a first chamber, a tip member secured to the housing and forming a second chamber adjacent said first chamber, a diaphragm member forming a common closure for both chambers, heating means within the second chamber, a first contact within the first chamber, and a second contact affixed to the diaphragm also within the first chamber. This second contact is adapted for engaging the first contact when the temperature difference between the two chambers exceeds a predetermined level.

3,813,630

THERMOSTAT

James Welland Dalzell, 624-14th St., East, Brandon, Manitoba, Canada

Filed May 21, 1973, Ser. No. 362,228
Int. Cl. H01h *37/12*
U.S. Cl. 337—360 **9 Claims**

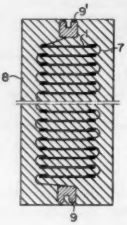


An ON, OFF switch for a load is controlled by a primary bimetallic plate or other temperature sensor, such as an hydraulic bulb. In addition to sensing the temperature of the controlled space, the primary sensor receives heat from a heater in series with the load or from the switch during the ON condition. A mechanical transmission interconnects the primary sensor and the switch. Connected in such transmission so as to be able to vary its effective length, is a secondary bimetallic plate or other temperature sensor. This secondary sensor receives from the switch some of the heat generated therein by passage of the load current. In this way the secondary sensor at least in part compensates for the effect on the switch of the heating of the primary sensor. The advantage of this arrangement is reduction of "droop". There is a heater for heating the secondary sensor in the OFF condition of the switch. The combined effect of the two heaters and the two sensors is to enable a relatively high cycle rate and small "room swing" to be obtained at the same time as a relatively small "droop".

3,813,631
HIGH RESISTANCE RESISTOR DEVICE FOR DC HIGH VOLTAGE CIRCUITS

Youichi Matsuda, Hitachi; Hiroshi Suzuki, Hitachi; Nobuhiko Shito, Hitachi, and Yasushi Saito, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed July 25, 1973, Ser. No. 382,336
Claims priority, application Japan, Aug. 9, 1972, 47-79123; Aug. 9, 1972, 47-79124
Int. Cl. H01c *1/02*
U.S. Cl. 338—320 5 Claims

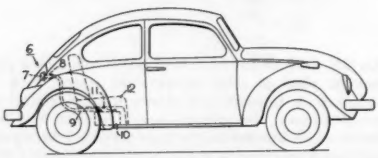


A high resistance resistor device for d.c. high voltage circuits in which a suitable number of film resistor elements required for providing the desired resistance value are electrically connected in series and are molded as a unit with an adhesive thermo-setting resin composition. Each film resistor element includes a linear resistive film consisting of a plurality of rectilinear portions formed on a refractory insulating substrate and a plurality of portions connecting the opposite ends of the rectilinear portions in series. The resistor film is coated with a glass layer for protection. These film resistor elements are superposed and spaced from each other by a predetermined distance, and the adhesive thermo-setting resin composition covers the surfaces of the film resistor elements for electrically insulating the resistive films of these elements from each other.

3,813,632
ADAPTER FOR A VEHICLE HAVING A BUILT-IN DIAGNOSTIC SYSTEM

Hugh S. Drewry, Wauwatosa, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 4, 1972, Ser. No. 311,888
Int. Cl. H01r *33/00, 13/64*
U.S. Cl. 339—10 4 Claims

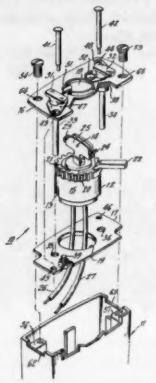


A family of adapters for a vehicle having a built-in diagnostic system utilizing a multi-wire electrical cable providing a plurality of connections to the operating parts of the vehicle. The cable terminates in a connector located in an accessible position on the vehicle to which the diagnostic machine is connected. Each adapter is provided with special elements to engage only that portion of the connector which is electrically connected to the particular operating parts of the vehicle to be tested. The adapter is provided with exposed conventional terminals constructed and arranged to permit connection to a conventional test or repair instrument for the particular operating part of the vehicle.

3,813,633
POWER TAP FOR CONTINUOUS OUTLET DUCT

Ralph C. Clement, Bellefontaine, Ohio, assignor to I-T-E Imperial Corporation, Spring House, Calif.

Filed Feb. 16, 1973, Ser. No. 333,024
Int. Cl. H01r *3/06*
U.S. Cl. 339—14 R 11 Claims

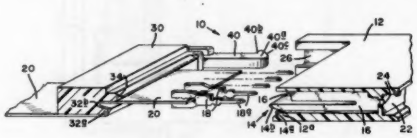


Removable device for tapping power from a continuous outlet duct having a stylized extruded housing is constructed with gear elements interconnecting the contact carrier and two mechanical retaining elements. A single manually operated lever is provided to operate the gear elements to simultaneously make electrical and mechanical holding connections between the power tap and the duct. Appropriately located spring fingers mounted to the power tap contact the duct housing to provide a positive ground connection, and cooperating polarizing formations of the power tap and duct protect against the making of improper electrical connections.

3,813,634
STRAIN RELIEF FOR FLAT CABLE OR THE LIKE

Jon Wigby, Sandy Hook, and Leonard St. Jacques, South Norwalk, both of Conn., assignors to Burndy Corporation, Norwalk, Conn.

Filed Dec. 29, 1972, Ser. No. 319,149
Int. Cl. H01r *13/58*
U.S. Cl. 339—17 F 1 Claim

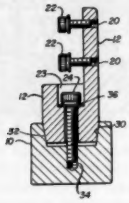


A strain relief construction for use with electrical connectors for flat ribbon cable or the like comprises two mating members having complementary tape confronting surfaces which are substantially S-shaped in cross section and substantial mirror images of each other. The two members are joined together with a portion of the flat cable clamped between the complementary surfaces and formed into a similar S-shaped curve thereby. The two members may, for example, form a cable plug or receptacle connector, or the strain relief construction may be used in other applications such as in making cable connections to printed circuit boards.

3,813,635
TERMINAL CONNECTOR

James Joseph Cooper, Jr., and Gary Lee Schurter, both of St. Louis, Mo., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 80,339, Oct. 13, 1970, Pat. No. 3,699,497.
This application June 9, 1972, Ser. No. 261,539
Int. Cl. H01r *13/60*
U.S. Cl. 339—22 B 3 Claims

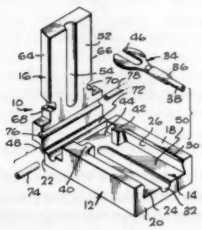


To provide a large contact area and rigid high pressure connection between a heavy power carrying terminal and a power distribution bus, capable of being thoroughly insulated with water-impervious material, a tapered or inverted frusto-conic socket is suitably machined or incised into the bus and a terminal having a similarly tapered shank is press-fitted into the socket. A clearance bore through the shank receives a bolt for connection through a receiver in the bus located beneath the conic socket. An arched washer may be used under the head of the bolt to maintain a high pressure engagement between the terminal shank and the bus during changing thermal or vibratory conditions. The entire connection area may then be jacketed with a double jacket, the jacket serving to insulate the bus and connection in a water-impervious, sealing fashion.

3,813,636
ELECTRICAL TERMINAL CONNECTOR

John R. Mason, Los Angeles, Calif., assignor to Dracon Industries, Chatsworth, Calif.

Filed Sept. 10, 1971, Ser. No. 179,314
Int. Cl. H01r *13/48*
U.S. Cl. 339—59 R 10 Claims

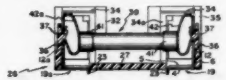


Electric terminal connector with base having receptacle therein accepts a pair of spade or forked wire connectors on the ends of different wires. Top fits into receptacle to clamp connectors together and totally enclose them for releasable and reusable fully insulated connector structure.

3,813,637
RETAINERS FOR ELECTRICAL COMPONENTS

Stephen J. Grebik, Roseville, and Roger B. Anthony, Utica, both of Mich., assignors to Essex International, Inc., Fort Wayne, Ind.

Filed June 28, 1972, Ser. No. 267,021
Int. Cl. H01r *13/50, 13/12*
U.S. Cl. 339—59 R 16 Claims

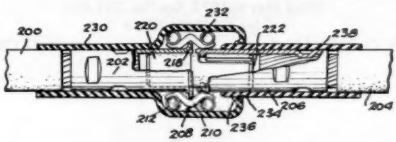


Apparatus for retaining an electrical component such as a fuse comprises a walled, hollow body the front of which is split to form a yieldable socket for the accomodation of one end of the component and including a resilient arm extending from the rear wall to form a loop having a portion thereof lying between the front and rear walls in a position to engage the end of the component. The arm terminates in a free end which bears against the rear wall of the body. Retainers constructed according to the invention are adapted to be used in pairs and may be mounted in an insulated carrier block having resilient latch fingers which project into openings formed in the rear wall of each retainer. The retainer bodies may be used either in pairs or in gangs of pairs. When the bodies are ganged, each body is connected to a common conductor incorporating means for connecting it to an electrical circuit.

3,813,638
CABLE CONNECTOR

Joseph D. Kinnear, 3019 E. Miles Rd., Warren, Mich.

Continuation-in-part of Ser. No. 57,568, July 23, 1970, abandoned. This application Apr. 18, 1972, Ser. No. 245,138
Int. Cl. H01r *13/62*
U.S. Cl. 339—64 R 32 Claims



An electrical connector having a pair of telescopically engageable housings in which the ends of single or double pole conductors to be connected are enclosed. A tulip-type connector is mounted on the enclosed end of one of the conductors for engagement with the end of the other conductor when the housings are telescopically engaged. The operative end face of the housing enclosing the tulip connector is constructed to present a dead front to prevent accidental contact with the live conductor with one's finger or a tool, such as a screwdriver. The housings and the ends of the conductors are constructed to minimize arcing between the conductors to a maximum extent when the connector is coupled and uncoupled under load.

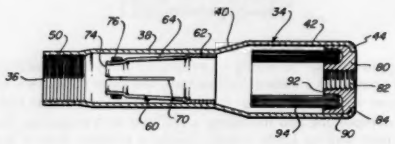
3,813,639
ELECTRICAL CONNECTION FOR HIGH VOLTAGE ELECTRICAL SYSTEMS

Gary Lee Schurter, Kirkwood, and Carlo Bruno DeLuca, Chesterfield, both of Mo., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 27, 1972, Ser. No. 238,562
Int. Cl. H01r *13/52*
U.S. Cl. 339—111 16 Claims

Disclosed is a non-vented electrical connector designed to mate with a connection to a transformer or the like in a prima-

ry power distribution system. The connector will mate with and make electrical connection with a load break terminator as used in such systems, so that an electrical circuit carrying high currents at elevated voltage levels may be broken in the field without harm to the service personnel making and breaking the connection. The connector has internal members for suppressing the arc generated by high current, high voltage circuit openings and closures. In addition, the connector has internal structure for rapidly condensing and diffusing gases formed within the connector by an arc. In this way, the gas



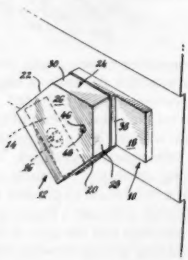
pressure developed in the connector is relieved to prevent pressure blowouts of the terminator. The gas condensing structure shown includes further, a multiple thickness tubular screen, which may be comprised of a length of fine mesh screen coiled into a tubular form. In addition, the connector has an internal scraping member which contacts the arc follower and removes surface contaminants to prevent such contaminants from adding to an arc and to prevent secondary arcing due to the presence of such contaminants in the path of an arc.

3,813,640

WEATHERPROOF ENCLOSURE FOR ELECTRICAL DEVICES

Vincent L. Carissimi, Fairfield, Conn., assignor to Harvey Hubbell Incorporated, Bridgeport, Conn.

Filed May 8, 1972, Ser. No. 251,418
Int. Cl. H01r 13/50
U.S. Cl. 339—156 R **12 Claims**



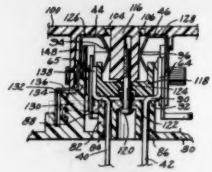
A weatherproof enclosure for electrical devices such as a receptacle which may be used with vertically or horizontally mounted outlet boxes for maintaining weatherproof protection of the electrical devices in either orientation. The enclosure includes a plate portion for abutting the surface outlet box or the wall in which an outlet box is flush-mounted, and a housing portion connected to the plate which includes a mounting wall in which the enclosed electrical device may be mounted extending at an angle to the axis of the plate. The mounting wall may be recessed within the housing so that the side, top and back walls of the housing form a protective skirt around the electrical device mounted therein.

3,813,641

ELECTRIC CONNECTING MECHANISM

Charles A. Balchunas, Hopkinton, Mass., assignor to General Electric Company, Bridgeport, Conn.

Division of Ser. No. 260,759, June 8, 1972, Pat. No. 3,754,107.
This application Feb. 12, 1973, Ser. No. 331,762
Int. Cl. H01r 13/50
U.S. Cl. 339—170 **2 Claims**



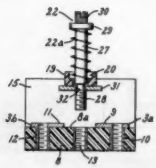
An electrical connecting mechanism wherein a pair of shouldered prongs are uniquely mounted in a housing for connecting the mechanism to a conventional wall mounted outlet box. The construction includes shoulders on the prongs which are sandwiched between bosses which are formed on a rear casing and a front cover of the housing. Electrical outlet receptacle spring contacts are placed over the wall prongs in the vicinity of the wall prongs so that the wall prongs and the receptacle spring contacts, are reliably connected to each other and positioned within the housing with the use of relatively few parts.

3,813,642

DISCONNECT TERMINAL BOARD

William M. Fisher, Springfield, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed Feb. 9, 1973, Ser. No. 330,990
Int. Cl. H01r 9/08
U.S. Cl. 339—198 R **9 Claims**



A disconnect terminal board includes a bridging contact attached to an axially movable insulating plunger and adapted to engage a pair of spaced-apart stationary contacts. The plunger extends through an aperture in a guide member, and it is spring biased to a disconnected position in which it protrudes from the guide member, thereby visually indicating the disconnected state. The plunger includes a rotatable locking portion which cooperates with stationary clamping means to retain the plunger in a connected position upon moving the plunger against the spring bias to carry the bridging contact into engagement with the stationary contacts and then rotating the locking portion to a locked position.

3,813,643
TERMINATING OF ELECTRICAL CONDUCTORS

Marvin E. Hartz, Bradford Woods, Pa., assignor to Essex International, Incorporated, Fort Wayne, Ind.

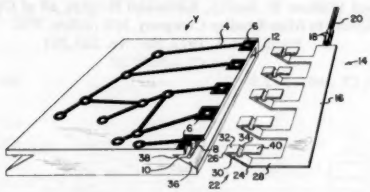
Continuation-in-part of Ser. No. 193,284, Oct. 28, 1971, abandoned. This application May 14, 1973, Ser. No. 360,090
Int. Cl. H01r 11/04, 11/22, 43/00
U.S. Cl. 339—223 S **27 Claims**

Terminating of an electrical conductor comprising a non-conductive core having conductive means on its surface and enclosed within an insulating jacket is effected by stripping the insulating jacket from at least one end of the conductor and casting an electrically conductive anchor member on the exposed end of the conductor, the anchor member being formed from a molten metal which shrinks upon solidification to provide an exceptionally secure mechanical and electrical bond between the core and the anchor member. The exposed end of the conductor may be kinked prior to the casting of the member.

3,813,644
POSITIVE LOCK ELECTRICAL CONNECTOR AND RECEPTACLE ASSEMBLY

Bernard Edward Shlesinger, Jr., 9411 Macklin Ct., Alexandria, Va.

Filed Oct. 7, 1971, Ser. No. 187,334
Int. Cl. H01r 11/22
U.S. Cl. 339—252 S **12 Claims**



An electrical connector and receptacle assembly comprising a receptacle; a plug insert having a receptacle engaging portion having a resilient bend therein; the receptacle engaging portion having forwarding and rearwardly projecting members extending from the bend; means on the plug insert for connecting the connector to an electrical lead; the receptacle having a recess having its walls conforming to the outside surface of the plug insert receptacle engaging portion; and the receptacle recess and plug insert receptacle engaging portion having cooperating detent means, the plug insert means being positioned on at least one of the projecting members.

3,813,645
SPARK PLUG TERMINAL

Howard A. Elliott, Detroit, and Stephen J. Grebik, Roseville, both of Mich., assignors to Essex International, Inc., Fort Wayne, Ind.

Filed Feb. 11, 1972, Ser. No. 225,581
Int. Cl. H01r 11/22
U.S. Cl. 339—259 R **15 Claims**

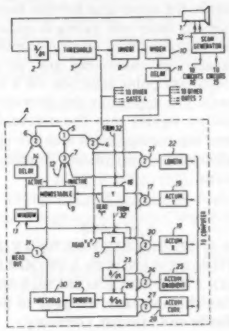
A spark plug terminal having an initially tubular body portion between its ends is provided with an axially elongated indentation in one side thereof, the maximum depth of the groove being such that the inner surface of the indentation bears against the inner surface of the diametrically opposed side of the body portion and the width of the indentation being such that the sides of the latter engage the corresponding sides of the body portion. The body portion may remain axially straight or it may be bent between its ends to form an elbow,

the direction of bending being such that the groove is at the inside of the elbow. One end of the terminal is provided with means for attaching it to a conductor and the opposite end of the terminal is provided with means for connecting it to the electrode of a spark plug. A sleeve or boot of dielectric material is assembled with the terminal.

3,813,646
PATTERN RECOGNITION DEVICES

David John Quarmby, London, England, assignor to Emi Limited, Hayes, Middlesex, England

Continuation of Ser. No. 91,777, Nov. 23, 1970, abandoned. This application Oct. 17, 1972, Ser. No. 298,380
Int. Cl. G06k 9/02
U.S. Cl. 340—146.3 AE **4 Claims**

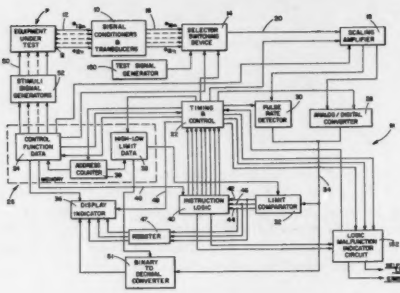


An input arrangement for the decision mechanism of a pattern recognition device includes a cathode ray tube arranged to execute a raster of successive scanning sweeps over an area which may include a pattern having an edge. Apparatus is provided for detecting an edge during one scanning sweep and for producing signals indicative of the position co-ordinates of the detected edge. A region of the area adjacent to the detected edge is searched during at least one subsequent sweep to detect an extension of the edge and apparatus is provided for producing further signals indicative of the position coordinates of any such extension. Analyzing means are provided to analyze said signals and to produce input signals respectively representing the position, length, orientation and curvature of a subsequentially circular arc indicative of said edge. Means are provided for applying said input signals to said decision mechanism.

3,813,647
APPARATUS AND METHOD FOR PERFORMING ON LINE-MONITORING AND FAULT-ISOLATION

Brian Hum Loo, Brea, Calif., assignor to Northrop Corporation, Los Angeles, Calif.

Filed Feb. 28, 1973, Ser. No. 336,792
Int. Cl. G06f *11/00*, *11/04*; G05b *23/02*
U.S. Cl. 340—172.5 **40 Claims**



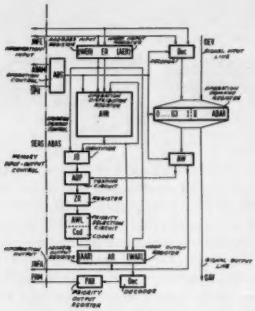
An electronic monitoring apparatus used in on-line performance monitoring and fault-isolation of complex prime systems through a programmed sequence of parameter measurements based on automatic logical decision functions. The monitoring apparatus which may be connected to external equipment is provided with a mechanism for manual selection of any test point on the external system which is to be measured. In addition, the apparatus includes means for displaying identification of the test point thus measured, the measured value thereof, as well as its low limits or its high limits. A timing control circuit in the apparatus permits measurement and comparison of signals from the external system with stored high and low limit tolerance data on a synchronized basis. The apparatus is capable of examining any of a plurality of parameters through test point selection on a controlled random selection basis. The apparatus also provides means for introducing simulation signals into the external system. Self-check sub-systems are incorporated into the apparatus to assure proper performance, prior to any monitoring and fault-isolation operations.

3,813,648
APPARATUS AND PROCESS FOR DISTRIBUTION OF OPERATION DEMANDS IN A PROGRAMMED CONTROLLED DATA EXCHANGE SYSTEM

Josef Huber, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed June 9, 1971, Ser. No. 151,448
Claims priority, application Germany, June 9, 1970, 2028345
Int. Cl. G06f *9/18*
U.S. Cl. 340—172.5 **4 Claims**

A process and apparatus are described for operating a program controlled data exchange system having at least one central memory constructed in the form of a multistorage unit containing programs necessary for the operation of the system. The system also has processing units which operate cyclically with the central memory over a memory input-output control according to the principles of demand and call-back. The reception, distribution and selection of operation demands sent by the processing units take place at a central location over an operation demand control in which an operation distribution register contains a specific association given through address and contents between storable information about the priority of an operation and the information about the processing unit carrying out an operation. For the targeted distribution of operation demands the information about the priority of an operation to be carried out serves as an internal register address for a seeking operation in the operation distribution register. The aforementioned seeking process results in information being available for the identification of the processing unit carrying out this operation. For the selection of operation demands the processing units initiate an associative seeking process, after the completion of an operation.

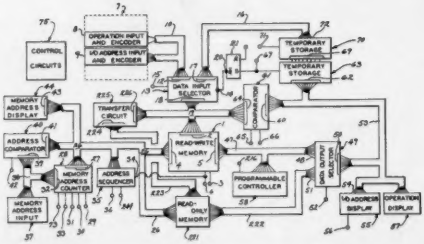


During the seeking process, the entire contents of the operation distribution register are available for a comparison process for which comparison the information identifying the demanding processing unit serves as comparison criteria. Resulting from this comparison, the information stored for this processing unit in the operation demand control about the highest priority of an operation is available.

3,813,649
CONTROLLER PROGRAM EDITOR

Odo J. Struger, Mayfield Heights; Valdis Grants, Lyndhurst, and William W. Searcy, Richmond Heights, all of Ohio, assignors to Allen Bradley Company, Milwaukee, Wis.

Filed Sept. 1, 1972, Ser. No. 285,381
Int. Cl. G06f *9/00*
U.S. Cl. 340—172.5 **10 Claims**

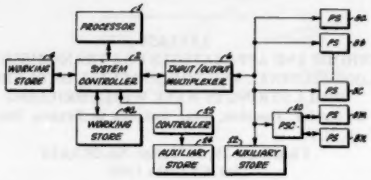


A program loader for a programmable controller includes a read-write memory into which an initial program is loaded, tested and edited. The programmable controller is operated and the condition of an input or output device which it controls is monitored each time an instruction containing the device's I/O address is read from the read-write memory. When the loader is operated in a SEARCH mode, the program is read in sequence from the read-write memory and each instruction is compared with an instruction manually inserted at an input circuit. When operated in a GAP or UNGAP mode, an empty line, or gap is either created or closed in the stored program by shifting a set of instructions one line in the read-write memory. The GAP and UNGAP operations are performed by sequentially reading out each instruction, and replacing it with the adjacent temporarily stored instruction.

3,813,650
METHOD FOR FABRICATING AND ASSEMBLING A BLOCK-ADDRESSABLE SEMICONDUCTOR MASS MEMORY

John C. Hunter, Phoenix, Ariz., assignor to Honeywell Information Systems, Inc., Waltham, Mass.

Filed Dec. 26, 1972, Ser. No. 317,971
Int. Cl. G06f *1/00*; G03c *5/00*; G11c *7/00*
U.S. Cl. 340—172.5 **12 Claims**

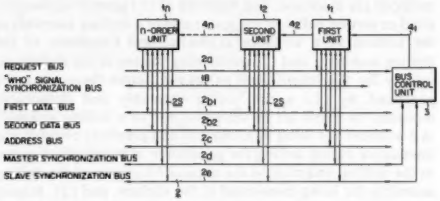


A block-addressable mass memory comprising wafer-size module of LSI semiconductor basic circuits. The basic circuits are intrinsically addressable and interconnected on the wafer by non-unique wiring bus portions formed in a universal pattern as part of each basic circuit. The basic circuits are tested and assigned an address if operable. A disconnect circuit isolates defective basic circuits from the bus. Assemblies utilizing both low and high yield wafers are formed.

3,813,651
DATA PROCESSING SYSTEM

Hirohide Yamada, Tokyo, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Dec. 26, 1972, Ser. No. 318,690
Claims priority, application Japan, Dec. 29, 1971, 46-705; Dec. 29, 1971, 46-707; Dec. 29, 1971, 46-2051
Int. Cl. G06f *9/00*
U.S. Cl. 340—172.5 **8 Claims**

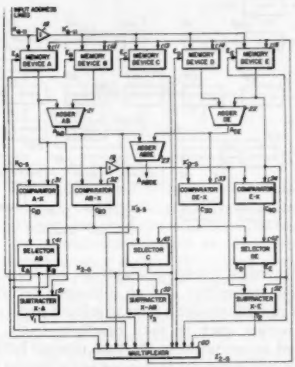


A data processing system comprising an assembly of buses for interconnecting a plurality of units, the units including data processing units, a memory unit and peripheral data processing units, the data processing units being connected in series with each other via a signal line and being further connected to said bus assembly in parallel relationship with each other. A bus control unit is provided for delivering a "who" signal (which is used for detecting a requesting unit) to the first one of said serially connected data processing units when said unit requests the use of said bus assembly. Further provided is an interface circuit unit which receives the "who" signal from the signal line and which, when any of the units does not make its own request for the use of the bus assembly upon receipt of the "who" signal, transmits said "who" signal to the immediately following unit and, when the first mentioned unit requests the use of the bus assembly for itself, prevents said "who" signal from being further transmitted, and selects another unit associated with the address signal delivered from said bus requesting unit and interconnects both units through said bus assembly.

3,813,652
MEMORY ADDRESS TRANSFORMATION SYSTEM

Ben R. Elmer, Glendale, and Melvin H. Eklund, Phoenix, both of Ariz., assignors to Honeywell Information Systems, Inc., Waltham, Mass.

Filed Jan. 15, 1973, Ser. No. 323,586
Int. Cl. G11c *7/00*
U.S. Cl. 340—172.5 **4 Claims**

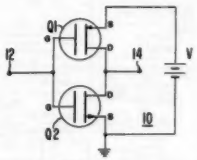


A sys'em is disclosed in which an input binary address is transformed into a set of module select signals and a set of address signals whereby an aggregate of memory modules, each of which may contain a different number of storage cells, are combined to form a memory assembly which has a fixed number of storage cells. The address transformation system uses signals taken from the individual modules which represent the number of memory cells contained therein.

3,813,653
MEMORY CELL WITH REDUCED VOLTAGE SUPPLY WHILE WRITING

John I. Smith, Sunnyvale, and William R. McKinley, San Jose, both of Calif., assignors to Rolm Corporation, Cupertino, Calif.

Filed Dec. 18, 1972, Ser. No. 316,102
Int. Cl. G11c *11/40*, *7/00*
U.S. Cl. 340—173 FF **36 Claims**

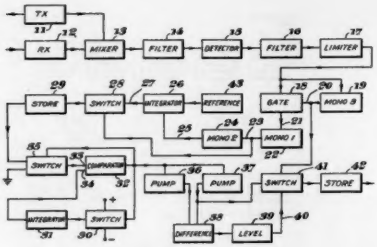


A semiconductor memory cell suitable for use in a memory matrix includes means for reducing the supply voltage to the flip-flop forming the memory cell during a write operation. The voltage is, however, maintained at a sufficiently high value to maintain the cell in a static mode of operation.

3,813,654
DIAGNOSTIC APPARATUS FOR FETAL HEARTBEAT MONITORING

David A. Clifton, Littlehampton, and Frederick D. Fielder, Bognor Regis, both of England, assignors to Sonicaid Limited, Bognor Regis, England

Filed Oct. 5, 1971, Ser. No. 186,691
Int. Cl. G01s 9/66; A61b 5/02
U.S. Cl. 340—3 D **18 Claims**

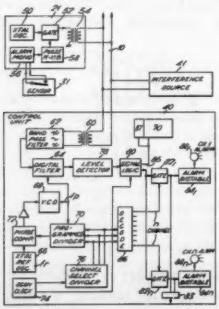


The invention relates to diagnostic apparatus including an ultrasonic transmitter and an ultrasonic receiver. The beat signal is passed through a filter to select a particular frequency which occurs once in each heartbeat cycle. A voltage is produced proportional to the time interval between adjacent pulses of this particular frequency and a second train of pulses having a much higher repetition frequency is produced, the frequency of this second pulse train varying inversely with said voltage. The second train is applied to two pump circuit, one of which produces a signal representing the instantaneous frequency of this pulse train and the other of which produces a signal representing the average value of this frequency. The instantaneous signal is applied to a track/store amplifier which is changed over from its tracking function to its storage function when the difference between the instantaneous and average values exceeds a predetermined minimum.

3,813,655
MONITORING SYSTEMS AND APPARATUS THEREFOR

Howard John Brandsom Allen, West Lothian, and James Neill Johnston, Edinburgh, both of Scotland, assignors to Microwave and Electronic System Limited, Newbridge, Midlothian, Scotland

Filed May 23, 1972, Ser. No. 256,047
Claims priority, application Great Britain, May 24, 1971, 16760/71
Int. Cl. H04q 9/00
U.S. Cl. 340—151 R **21 Claims**

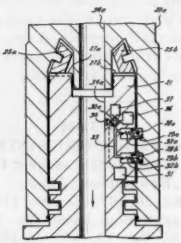


A central station monitors the condition of a group of remote sensors each of which is connected in a reporter unit which generates a characteristic frequency signal the modulation condition of which is changed when the sensor goes into the alarm condition. The central station scans the characteristic frequencies and detects the nature of the modulation received at each. The absence of a signal at any of these frequencies is also detected. The characteristic frequencies are generated by crystal-controlled oscillators and the central processor includes a digital filter locked to a crystal-controlled reference oscillator to give high immunity to noise. The wanted signals may be deliberately hidden in the signals of a noise or swept frequency source.

3,813,656
METHODS AND APPARATUSES FOR TRANSMISSION OF LONGITUDINAL AND TORQUE PULSE DATA FROM DRILL STRING IN WELL WHILE DRILLING

Joe R. Fowler, Houston, Tex., assignor to Texaco, Inc., New York, N.Y.

Filed Sept. 29, 1972, Ser. No. 293,610
Int. Cl. G01v 1/40
U.S. Cl. 340—18 LD **8 Claims**



Two methods and two mechanisms for carrying out the methods are disclosed. The methods of (1) generating longitudinal or torque pulses at the lower end of a drilling assembly in the bottom of a wellbore at the natural frequency of the drilling assembly, and (2) monitoring the top of the drilling assembly for the longitudinal or torque pulses therein may be practiced by (1) a drill collar rotatably and detachably mounted on a drill bit on the lower end of a drilling assembly in a wellbore for being momentarily and precisely coupled and uncoupled during drilling for generation of longitudinal pulses in the drilling assembly at the natural frequency of the drilling assembly for being monitored at the surface, and (2), respectively, a drill collar rotatable by a plurality of controllable jets exhausting tangentially of the drill collar outer periphery for generating torque pulses in the drilling assembly at the natural frequency thereof for being monitored at the surface.

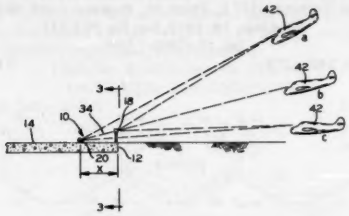
3,813,657
GLIDE SLOPE INDICATOR

Richard Dale Henry, Hockstown Grade Rd., R.D. No. 1, Clinton, Pa.

Filed Apr. 24, 1972, Ser. No. 246,983
Int. Cl. G08g 5/00
U.S. Cl. 340—26 **10 Claims**

A glide slope indicator consisting of an elevated rectangular light display is combined with two circular lights which are located at a lower elevation and are disposed laterally one at each side of the rectangular light display and are displaced from the rectangular light display in the direction of the landing aircraft along the length of the runway to form a subtended angle to the horizon, so that an aircraft on landing approach, will view the display and the combination of lights will appear colinear when the aircraft is on the proper glide slope ap-

proach. The two circular lights will appear above the rectangular light display at too steep a glide slope approach, and the two circular lights will appear below the level of the rectangular light display at too shallow glide slope approaches. The display provides a visual indication to aircraft on landing approaches so that the display at the proper glide slope approach will present the circular and rectangular lights as substantially colinear.



3,813,658

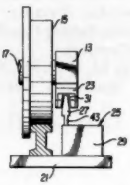
MOVABLE-OBJECT IDENTIFICATION SYSTEM

Edward Rich, Jr., College Park, Md., assignor to Walter I. Charlton, College Park, Md., a part interest

Filed Mar. 22, 1972, Ser. No. 236,924

Int. Cl. G06k *7/015, 7/08*

U.S. Cl. 340—146.3 K **24 Claims**



A railroad car identification system is described herein which includes a magnetic identification record mounted on a railroad car and a stationary sensing means for reading information from the identification record as the railroad car passes the stationary sensing means. The system comprises a channeling means and a follower which is guided through the channeling means as the railroad car passes the stationary sensing means. In this manner the identification record is held in close proximity to a sensing element of the stationary sensing means. In one embodiment the channeling means is a part of the identification record and mounted on the railroad car and in another embodiment the follower is a part of the identification record and mounted on the railroad car. In both embodiments provision is made for modifying information on the identification record. Various modifications of both embodiments are described.

Also described herein is an electrical circuit for processing information read from the identification record. The circuit includes circuitry for storing such information on a shift register and circuitry for subsequently transferring such information to a computer.

3,813,659

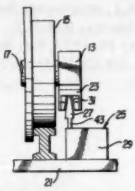
MOVABLE-OBJECT IDENTIFICATION SYSTEM

Walter T. Charlton, College Park, Md., assignor to Edward Rich, Jr., College Park, Md., a part interest

Filed Mar. 22, 1972, Ser. No. 236,925

Int. Cl. G06k *7/015, 7/08*

U.S. Cl. 340—146.3 K **7 Claims**



A railroad car identification system is described herein which includes a magnetic identification record mounted on a railroad car and a stationary sensing means for reading information from the identification record as the railroad car passes the stationary sensing means. The system comprises a channeling means and a follower which is guided through the channeling means as the railroad car passes the stationary sensing means. In this manner the identification record is held in close proximity to a sensing element of the stationary sensing means. In one embodiment the channeling means is a part of the identification record and mounted on the railroad car and in another embodiment the follower is a part of the identification record and mounted on the railroad car. In both embodiments provision is made for modifying information on the identification record. Various modifications of both embodiments are described.

Also described herein is an electrical circuit for processing information read from the identification record. The circuit includes circuitry for storing such information on a shift register and circuitry for subsequently transferring such information to a computer.

3,813,660

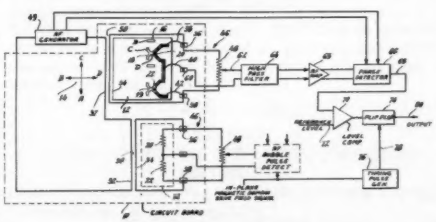
AN RF MAGNETO-RESISTIVE MAGNETIC DOMAIN DETECTOR

Carl F. Buhrer, Framingham, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Dec. 11, 1972, Ser. No. 314,052

Int. Cl. G11c *11/14, 19/00*

U.S. Cl. 340—174 EB **8 Claims**



A cylindrical magnetic domain detector is formed of a pair of series coupled magneto-resistive elements, one of which is disposed in magnetic coupling relationship with a cylindrical magnetic domain memory position, while the other element serves as a reference magneto-resistive element to cancel out interfering noise signals from a rotating domain driving field. The series coupled magneto-resistive elements are connected in a bridge network which is excited by a high frequency RF signal source through a conveniently located transformer. The

transformer is formed of a pair of closely spaced conductors printed on a circuit board on which the cylindrical magnetic domain memories are mounted.

3,813,661

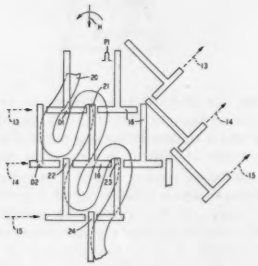
SINGLE WALL DOMAIN LOGIC ARRANGEMENT

Irynej Danylchuk, Morris Plains; Joseph Edward Geusic, Berkeley Heights, and Terence John Nelson, New Providence, all of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed May 29, 1973, Ser. No. 364,696

Int. Cl. G11c *11/14*

U.S. Cl. 340—174 TF **5 Claims**



Single wall domain logic is achieved based on bubble-bubble interaction with good operating margins by expanding interacting domains to a known size as the interaction occurs.

3,813,662

ELECTRICAL ALARM SYSTEMS

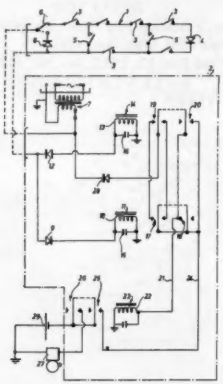
Nigel W. Lewis, 74 St. James St., London, England

Filed Feb. 1, 1972, Ser. No. 222,517

Claims priority, application Great Britain, Feb. 4, 1971, 3870/71

Int. Cl. G08b *19/00*

U.S. Cl. 340—213 R **17 Claims**



This invention provides an alarm system comprising a loop which incorporates a rectifier element and which is connected to an alternating current supply. The loop may be arranged and adapted — for example by the inclusion of appropriate switches — to be responsive to any contingency, such as intruders or fire. A sensing circuit is connected to the loop and may for example include two relays so arranged that upon effective open-circuiting of the loop, in which both relays are de-energised, and effective short-circuiting of the loop rectifier element, in which both relays are energised, an alarm is activated.

3,813,663

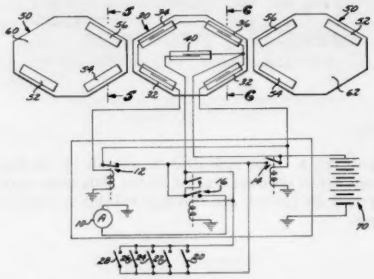
ELECTRICAL LOCKING ALARM SYSTEM

Dale M. Perkins, 8137 E. Phlox St., Downey, Calif. 90241

Filed Nov. 10, 1972, Ser. No. 305,421

Int. Cl. G08b *13/08*

U.S. Cl. 340—274 **9 Claims**



A lock including magnetically actuated reed switches positioned in a predetermined position and operatively connected into an electrical circuit having an alarm actuated by trip switches, wherein the lock is set for alarm actuation by a key having magnets arranged in a pattern to coincide with said lock.

3,813,664

APPARATUS FOR SUPERVISING EQUIPMENT WITH WARNING LIGHTS

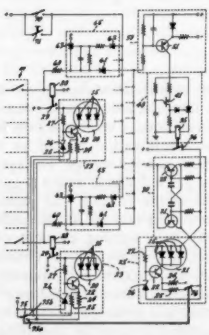
Wolf Geyer, Kirchweyhe, Germany, assignor to Yereinigte Flugtechnische Werke-Fokker Gesellschaft mit beschrankter Hafting, Breman, Germany

Filed May 24, 1972, Ser. No. 256,314

Claims priority, application Germany, May 29, 1971, 2126905

Int. Cl. G08b *21/00*

U.S. Cl. 340—248 R **17 Claims**



Apparatus for supervising equipment wherein plural signal paths are provided respectively developing signals indicative of errors in parts of the equipment, having a plurality of warning lights each including several light emitting gallium-arsenide diodes, a transistor for controlling the diodes, a filter and a translucent plate in front of the diode. The warning lights are

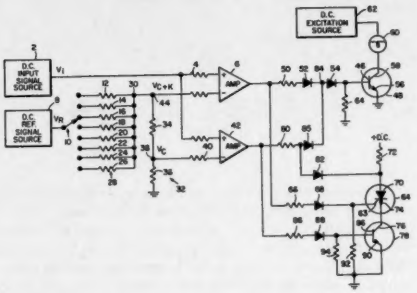
turned in response to the signals, a logic-or-configuration receives these signals and turns on, a multivibrator which drives a main warning light, also including light emitting diodes, transistor, filter and translucent plate.

3,813,665

CONDITION WARNING MEMORY CIRCUIT

Walter Parfomak, Wallington; Richard John Anderson, Fairfield, and Alfred Levine, Waldwick, all of N.J., assignors to The Bendix Corporation, Teterboro, N.J.

Filed Oct. 2, 1972, Ser. No. 294,060
Int. Cl. H03b *5/20*; G08b *21/00*
U.S. Cl. 340—248 A **6 Claims**



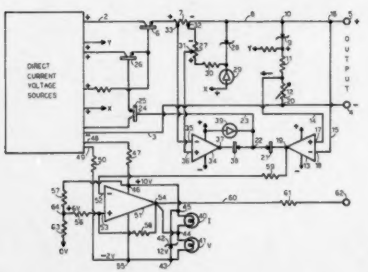
For use with a system for converting coded condition data to an analog signal corresponding to the condition, a memory type condition warning circuit having calibrating capabilities.

3,813,666

POWER SUPPLY MODE INDICATOR LAMP CIRCUIT

Joseph R. Gately, Woodside, N.Y., assignor to Forbro Design Corp., New York, N.Y.

Filed Mar. 2, 1973, Ser. No. 337,299
Int. Cl. G08b *21/00*
U.S. Cl. 340—248 A **4 Claims**



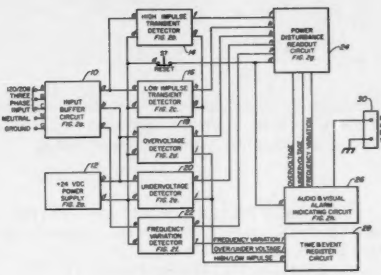
Voltage and current mode indicator lamps are connected in series across the bias voltage supply of an operational amplifier. The junction between the two lamps is connected to the output terminal of the amplifier. One input is connected to a source of reference voltage and the other to the output of the error voltage amplifier. As long as the voltage amplifier is controlling the power supply output, the voltage mode lamp is on. When the control switches to current mode, the error voltage amplifier output changes and switches the voltage mode lamp off and the current mode lamp on.

3,813,667

THREE-PHASE POWER DISTURBANCE MONITOR

Maurice N. Smith, Oxnard, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 29, 1973, Ser. No. 364,844
Int. Cl. G08b *19/00*
U.S. Cl. 340—248 A **20 Claims**



A three-phase power disturbance monitor for sensing and recording anomalies occurring in electrical power systems which cause operational malfunctions in, and damage to, critical loads such as computers and synchronous communication equipment. The system senses and counts over and under voltage conditions, over and under frequency variations, and high or low threshold pulse transients. The monitor provides visual and audio warnings of power supply conditions which could damage equipment if left uncorrected for a period of time. The number of disturbances exceeding certain values is displayed on a digital counter. The monitor is equipped with a common input voltage section, a common 24 volt d.c. power supply and a front panel a.c. volt meter. Upper and lower threshold values for each condition are adjustable between certain limits determined from particular applications of the monitor. The audio and visual warning systems remain on if the disturbance continues to exceed a predetermined value for length of time. An external voltage feature has the capability of triggering a remote alarm system, powering down critical equipment and initiating the switching of critical loads to another power source.

3,813,668

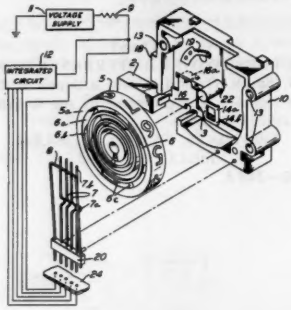
ANALOG TO DIGITAL CONVERTER EMPLOYING GROOVED DISC

Donald Ross, Chalfont, Pa., assignor to Automatic Timing & Controls, Inc., King of Prussia, Pa.

Continuation of Ser. No. 251,922, May 10, 1972, abandoned.
This application Oct. 1, 1973, Ser. No. 402,362
Int. Cl. H01h *19/58*; H03k *13/02*
U.S. Cl. 340—347 P **16 Claims**

A disc containing decimal numbers on its edge is mounted for step-by-step rotation in response to reciprocating action of a push-button. On one side of the disc grooves are formed corresponding to different binary places. Deep portions of the grooves correspond to binary zeros whereas shallower portions correspond to binary ones. A corresponding plurality of resilient sensing wires having protruding shoulder portions en-

gage the respective grooves. When the shoulders touch the shallower portions, they urge the wires laterally until they touch a switch connection thereby actuating a voltage



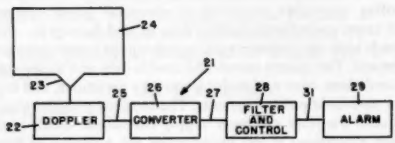
representative of a binary one. Projections are provided on the other side of the disc to prevent back-up or excess forward motion of rotation upon actuation of the push-button.

3,813,669

FREQUENCY FILTER CIRCUIT APPARATUS

Leonard Thomas Saunders, Milford, Mass., assignor to Walter Kidde & Company, Inc., Clifton, N.J.

Filed Mar. 27, 1972, Ser. No. 238,175
Int. Cl. G01s 9/02
U.S. Cl. 343—5 PD **23 Claims**



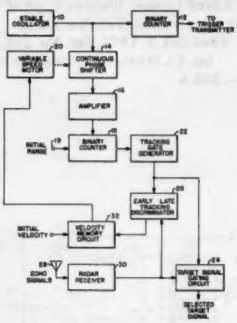
Disclosed is a sharp cutoff frequency filter. An alternating input signal derived from a source such as a Doppler detection system is fed to a threshold detector that provides a pulse output of a preselected first level when the alternating input voltage is below a predetermined input level and of a second preselected level during excursions of the alternating input above the predetermined threshold level. The two level pulse signal is next passed to a filter circuit. Within the filter, capacitive integration is provided such that energy is absorbed by a capacitor at a controlled rate when the pulse output is at the second preselected lvel and the capacitor is rapidly discharged when the threshold detector produces the first preselted output level. Thus, the energy stored in the capacitor is a measure of the total time that the second preselected digital output was produced in a particular cycle. A second threshold detector samples the energy stored in the capacitor and produces an output signal when energy in the capacitor exceeds a predetermined level. Thus, an output signal is supplied only if the alternating input signal possesses a minimum wave length and the filter circuit functions as a low pass filter. Another preferred embodiment is disclosed in which the quiescent output from the second threshold detector enables an output circuit to pass the pulse signal. The output circuit is disenabled only in the event that the alternating input signal possesses a wave length greater than a predetermined minimum length. Consequently, this second embodiment functions as a high pass filter. Additional related embodiments disclosed herein function as sharp cutoff notch and sharp cutoff band pass filters.

3,813,670

HIGH RESOLUTION RANGE TRACKING CIRCUIT

Frederick C. Alpers, Riverside, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 17, 1971, Ser. No. 210,263
Int. Cl. G01s 9/14
U.S. Cl. 343—7.3 **8 Claims**



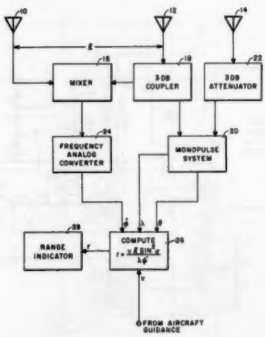
A circuit to provide an automatic range tracking function in very high resolution (short pulse radar or missile seeker). A tracking gate is generated by feeding the output of the oscillator for the transmitter trigger generator through a continuous phase shifter and binary counter to generate a gating pulse. An early-late tracking discriminator updates a velocity memory circuit that feeds a variable speed drive motor to drive the continuous phase shifter which completes a closed tracking loop. The tracking discriminator can be of an adaptive type that tracks a particular desired point on a compound target.

3,813,671

SYSTEM FOR MEASURING RANGE TO AN ELECTROMAGNETIC RADIATION SOURCE

David F. Scheets, Corona, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 16, 1968, Ser. No. 699,757
Int. Cl. G01s 5/12
U.S. Cl. 343—112 D **2 Claims**

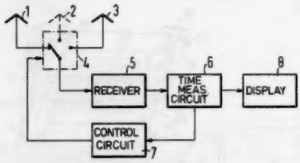


A system for passively determining range to an electromagnetic radiation source. Three receiving antennas are utilized with two antennas widely spaced apart with two spaced one-half to one wavelength apart. The output signals from the two pairs of antenna having a common antenna are used to compute range.

3,813,672
AUTOMATICALLY CONTROLLED DIGITAL VHF DIRECTION FINDER

Werner Weisser, Huetlingstrasse 9, 7750 Konstanz, Germany

Continuation-in-part of Ser. No. 35,501, May 7, 1970, abandoned. This application Aug. 7, 1972, Ser. No. 278,705
Claims priority, application Germany, May 7, 1969, 1923351
Int. Cl. G01s 3/48
U.S. Cl. 343—113 R 3 Claims

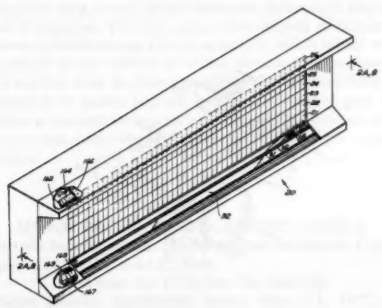


An automatically controlled digital VHF direction finding apparatus provided with two parallel antennae alternatively connected by a switch to a common receiving channel which produces an output signal to control the generation of a digital signal representing the phase difference between voltages induced in the antennae due to their being separated in space. The time interval is determined between two voltage points of equal value in the voltage generated in one antenna and between a given voltage point of the voltage generated in said one antenna and a voltage point of equal voltage of the voltage generated in the other antenna. A third antenna can be employed to increase the base of operation and for purposes of providing an error correcting signal, a cable of fixed length can be introduced into the circuits to provide a known increase of transit time.

3,813,673
DISPLAY PANEL

Charles J. Holloman, Stamford, Conn., assignor to Trans-Lux Corporation, New York, N.Y.

Filed June 26, 1972, Ser. No. 266,303
Int. Cl. G08b 5/22
U.S. Cl. 340—373 11 Claims

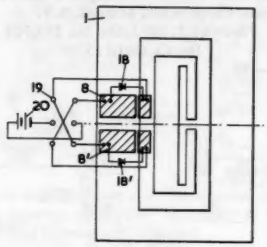


A display panel consisting of a plurality of lines of display modules with each line having the capability of providing a plurality of characters which are produced by electrical signals through a magnetic transducer at a write position and removed by reset magnet with each line of display modules moving upwardly on an endless belt after completion of writing in a line and wherein the vertical movement of the belt is indexed in synchronism with the movement of the magnetic transducers between the write and non-write position.

3,813,674
CAVITY BACKED DIPOLE-SLOT ANTENNA FOR CIRCULAR POLARIZATION

Michael John Sidford, Heckfield, England, assignor to The Secretary of State for Defence, London, England

Filed Jan. 4, 1973, Ser. No. 321,083
Claims priority, application Great Britain, Jan. 5, 1972, 393/72
Int. Cl. H01q 1/28, 13/18
U.S. Cl. 343—730 6 Claims

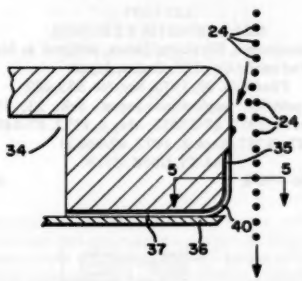


Aerial for receiving or transmitting circularly polarized electromagnetic radiation includes a dipole mounted substantially within the aperture of a slot and means for coupling the slot to the dipole asymmetrically. It may also include an electromagnetic cavity adjacent the coupled dipole and slot. In one embodiment the dipole is formed on one side of an insulating substrate and a narrow conductor is formed on the other side substantially opposite the dipole, with part of the dipole, the substrate, and the conductor together forming a stripline feed which may have a matching network formed by a further part of the dipole, the substrate, and the conductor.

3,813,675
CATCHING APPARATUS FOR A JET DROP RECORDER

Jack J. Steffy, Waverly, and Peter L. Duffield, Kettering, both of Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed Mar. 28, 1973, Ser. No. 345,754
Int. Cl. G01d 15/18
U.S. Cl. 346—75 4 Claims



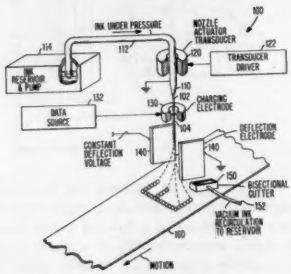
There is disclosed a catcher for an array-type fluid jet recorder. The catcher has a catching face upon which intercepted droplets impinge and a series of facial channels for carrying away the intercepted liquid in discrete rivulets. The channels communicate with an internal liquid collection cavity to which the intercepted liquid is delivered. There are disclosed two embodiments of the catcher. In one embodiment the rivulet guiding channels are cut into the drop catching face. In the other embodiment a wire is wound in closely spaced turns around the body of the catcher. In this latter embodiment the spaces between the windings serve as liquid con-

veying channels. In both embodiments of the invention the channels are mutually parallel and have a spacing equal to the spacing of the jets to be caught. The catcher is mounted in the recording head with the rivulet-guiding channels in alignment with the fluid jets so that each jet has its own channel for collection.

3,813,676
NON-SEQUENTIAL SYMBOL GENERATION SYSTEM FOR FLUID JET PRINTER

Bruce A. Wolfe, Endicott, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 5, 1972, Ser. No. 295,302
Int. Cl. G01d *15/18*
U.S. Cl. 346—75 **3 Claims**

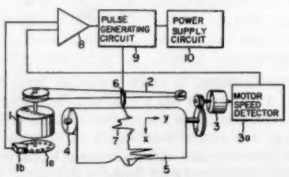


A fluid jet printing system includes a vibrating nozzle for emitting a stream of fluid which is broken into a series of uniform drops. The drops are charged by a voltage which is generated from a symbol code input by a symbol generator which produces a charging voltage representation for each drop of each symbol to be printed. The symbol generator includes a symbol storage means having stored in each location a representation of the charging voltage to be applied to each fluid drop. Deflection electrodes which supply an electric field for the purpose of deflecting charged fluid drops are positioned at an angle with respect to a base line for a row of symbols to provide greater flexibility and more accurate placement of fluid drops on a record media surface.

3,813,677
HEAT-SENSITIVE RECORD

Wataru Shimotsuma, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd, Osaka, Japan

Filed Feb. 20, 1973, Ser. No. 333,482
Claims priority, application Japan, Feb. 23, 1972, 47-18613; Mar. 8, 1972, 47-23852; May 2, 1972, 47-44000; May 16, 1972, 47-48757; Sept. 8, 1972, 47-90820
Int. Cl. G01d *15/10*
U.S. Cl. 346—76 R **10 Claims**

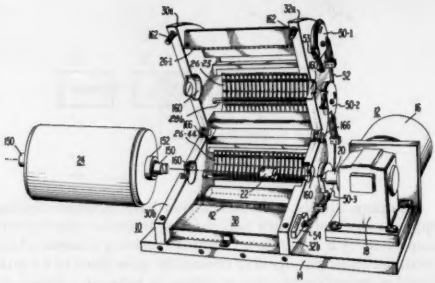


A heat-sensitive recorder using a thermal head, which is furnished with power in accordance with the speed of its movement relative to the recording sheet for the thermal control so as to obtain a uniform record quality.

3,813,678
HINGED DRUM SYSTEM

James Power Watson, Palm Beach, Fla., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 202,343, Nov. 26, 1971, Pat. No. 3,747,081. This application Dec. 11, 1972, Ser. No. 314,004
Int. Cl. G11b *5/76*
U.S. Cl. 346—138 **6 Claims**

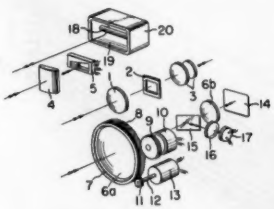


A magnetic drum has a plurality of record-reproduce heads along its surface. A common shaft having pins at precisely spaced intervals serves both to hold the heads in registration and to lift them from the surface of the drum. The device is journaled in bearings which serve as doweling to position split-end plates of the drum housing assembly. The drum is removable to permit interchangeability.

3,813,679
FOCUS DETECTOR DEVICE

Goro Hasegawa; Soichi Nakamoto, and Kazuya Hosoe, all of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 17, 1972, Ser. No. 298,185
Claims priority, application Japan, Nov. 2, 1971, 46-87411
Int. Cl. G03b *3/10*
U.S. Cl. 95—44 R **6 Claims**



A focus detector device of this invention employs flashlight as reference light so that the quantity of such light reflected by an object to be photographed is converted into an electrical signal and stored in a storage capacitor, whereby the focus detection may be effected in accordance with the quantity of the stored signal. The pre-flash is automatically actuated when the ambient light falls below a certain level. For focusing two photodiodes of logarithmic compression characteristics are used. A third photoelectric element meansures the amount of ambient light.

3,813,680
CAMERA HAVING INCREMENTALLY CONTROLLABLE APERTURE

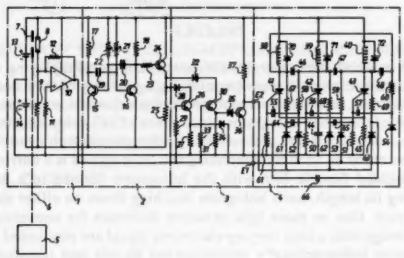
Eduard Wagensonner, Aschheim, and Alfred Winkler, Muenchen, both of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 23, 1973, Ser. No. 344,369

Claims priority, application Germany, Mar. 25, 1972, 2214725

Int. Cl. G03b 7/08, 9/02; G01j 1/44

U.S. Cl. 95—10 CD **12 Claims**



A camera has light sensitive means which furnish a signal corresponding to the light available for an exposure. The camera has a diaphragm having an adjustable aperture. Electromagnetic step switch means are coupled to the diaphragm for changing the size of the aperture a predetermined increment in response to a predetermined number of control pulses. An astable multivibrator furnishes a sequence of control pulses. A differential amplifier furnishes an output signal when the size of the aperture differs from the desired size corresponding to the exposure signal. A first gate transmits the control pulses from the astable multivibrator to the input of the electronic step switch means when the output signal of the differential amplifier is positive, while a second gate transmits control pulses from the astable multivibrator to the electromagnetic step switch means when the differential amplifier output is negative. The two gates have outputs so-connected to the step switch means that an armature which is part of the step switch means rotates in a first direction in response to pulses applied from the first gate and in the opposite direction in response to pulses applied through the second gate. The aperture is opened further for one direction of rotation of the armature and closes when the armature rotates in the opposite direction.

3,813,681
MOTOR DRIVEN PHOTOGRAPHIC CAMERA

Masayoshi Sahara, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

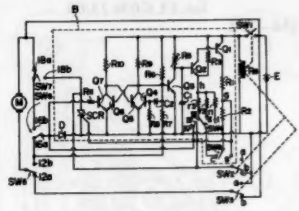
Filed Mar. 12, 1973, Ser. No. 340,138

Claims priority, application Japan, Mar. 13, 1972, 47-24706

Int. Cl. G03b 19/04

U.S. Cl. 354—173 **12 Claims**

A motor driven camera having a motor for driving the shutter releasing and film-winding mechanisms and capable of periodically repeating a predetermined cycle of operation is provided with a mechanism for automatically prolonging the cycle of operation when it fails to provide a correct exposure due to insufficient luminosity of a subject which requires a longer exposure time. The mechanism includes a first operating member which initiates the timing in association with shutter release and is actuated when a time corresponding to the predetermined cycle of operation has occurred and a second operating member which is actuated in relation to the completion of the exposure by the shutter, the motor operating the film winding mechanism when both of the first and second operating members are actuated.



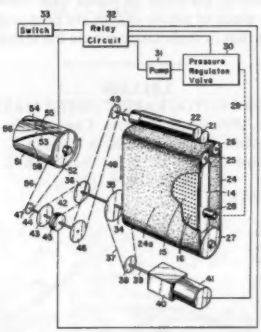
3,813,682
PHOTOMECHANICAL CAMERA

Yukio Nishikawa; Yoshio Nagao, both of Kyoto; Yoshio Miyauchi, Shiga; Noriaki Mori, Shiga, and Shigenori Matsui, Shiga, all of Japan, assignors to Dainippon Screen Seizo Kabushiki-Kaisha, Kyoto, Japan

Filed Nov. 20, 1972, Ser. No. 308,267

Int. Cl. G03b 19/04

U.S. Cl. 95—31 R **10 Claims**



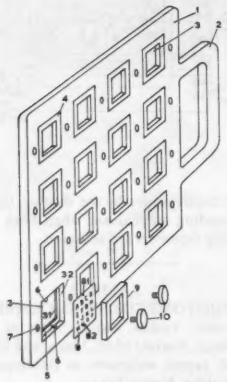
A photomechanical camera for use with a roll film has a vacuum suction box disposed in a camera housing and having a perforated front wall facing the lens system of the camera. An endless conveyor belt of a perforated material extends around the suction box and has a front run extending in substantially parallel and close contact relationship with the suction box front wall so that air is sucked into the suction box through the perforations in the belt and the suction box front wall. A length of film severed off and fed from the roll film onto the front run of the conveyor belt is sucked against the belt in the front run thereof and is conveyed toward an exposure position in which the center of the length of film in alignment with the optical axis of the lens system. Drive of the belt is so controlled that the motion of the belt is interrupted when the length of film is reached by the exposure position whereby the film is retained by the vacuum force in the exposure position during the exposure thereof.

3,813,683

CHARACTER MATRICES FOR PHOTOTYPESETTERS

Haydn V. Purdy, Down Cottage Down Pl., Windsor, and Ronald C. McIntosh, 17 Avenue Rd., St. Albans, both of England

Filed Aug. 10, 1970, Ser. No. 62,531
Int. Cl. G03b 15/00
U.S. Cl. 354—292 3 Claims



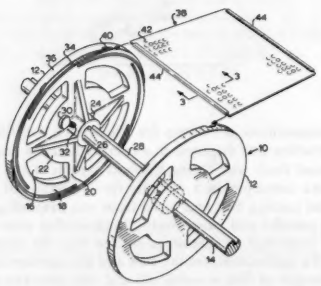
A character matrix array for a flying spot photographic character scanner is formed as a rigid plate of steel or the like with windows therein and a resilient gasket holds one or more arrays of character matrices on stable base films across the windows. The piece or pieces of film are prepunched with registration slots that fit registration pins in the frame.

3,813,684

REEL FOR PHOTOGRAPHIC SHEET MATE[illegible]

Roy Ramsdale, Willowdale, Ontario, Canada, assignor to Alex L. Clark Limited, Islington, Ontario, Canada

Filed Apr. 13, 1972, Ser. No. 243,642
Int. Cl. G03d 3/00
U.S. Cl. 354—341 6 Claims



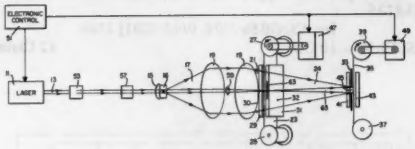
A reel for use in processing photographic sheet material, in which a pair of discs are axially mounted on a shaft. The discs have a plurality of opposed, convolute slots which receive the opposed edges of a flexible carrier on which the photographic material may be mounted.

3,813,685

HOLOGRAPHIC COLOR TELEVISION RECORD SYSTEM

Daniel S. St. John, Hockessin, Del., assignor to Holotron Corporation, Wilmington, Del.

Filed Dec. 11, 1969, Ser. No. 884,078
Int. Cl. H04n 9/02
U.S. Cl. 178—5.2 R 15 Claims



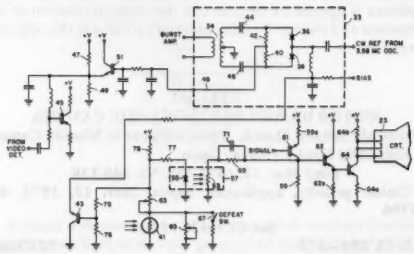
A method and apparatus for constructing and replaying an optical holographic record containing a plurality of very small holograms, each of which contains color information independent of the other holograms. Each piece of full color information, such as a frame of an ordinary color photographic movie, is recorded as an individual hologram. The record is a narrow, elongated flexible film with the holograms formed in a line along its length, each hologram touching those on either side thereof. One or more light sensitive detectors for converting an image into a time varying electronic signal are positioned to receive holographically reconstructed signals and transform them into a form acceptable to an ordinary color television set for displaying the color information thereon. One, two and three image detecting tube systems are disclosed. Several independent monochromatic components of a color information signal are carried on a single optical-electronic channel by modulation onto carrier frequencies either optically or electronically prior to construction of the hologram record. In a preferred embodiment described, the hologram record is constructed in a manner to reconstruct a board bandwidth luminance signal in a position spatially separated from the color component signal.

3,813,686

AMBIENT LIGHT RESPONSIVE CONTROL OF BRIGHTNESS, CONTRAST AND COLOR SATURATION

Eugene Peter Mierzwinski, Fort Wayne, Ind., assignor to The Magnovox Company, Ft. Wayne, Ind.

Continuation-in-part of Ser. No. 309,872, Nov. 27, 1972. This application Apr. 13, 1973, Ser. No. 350,853
Int. Cl. H04n 9/12
U.S. Cl. 358—27 14 Claims



A circuit deployed in a color television receiver for varying the brightness, contrast and color saturation of a displayed picture in accordance with variations in ambient light in the vicinity of a receiver screen is disclosed comprising a light sensing means mounted near the receiver screen and having an electrical parameter which varies in accordance with variations in the light incident on the light sensing means and

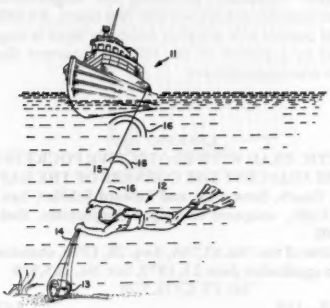
means responsive to those variations in the electrical parameter for varying the gains imparted to the luminance and chrominance signals in separately controlled diverse manners. In the disclosed preferred embodiment the light sensing means is a light dependent resistor such as a simple cadmium sulphide cell the resistance of which varies in response tc changes in the light impinging thereon. These variations in resistance are used to control the gain of both the chrominance and the luminance amplifiers of the receiver with the luminance gain being changed with a first particular gain rate and the chrominance gain at a second particular gain rate with a given change in ambient light level. In a preferred embodiment, the luminance gain rate is approximately 50 percent greater than the chroma gain rate for a given change in ambient light, when such gains are measured in decibels.

3,813,687

INSTANT REPLAY HELIUM SPEECH UNSCRAMBLER USING SLOWED TAPE FOR CORRECTION

Fred G. Geil, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 29, 1972, Ser. No. 310,628
Int. Cl. G11b *15/44, 15/10, 1/04*
U.S. Cl. 360—8 **9 Claims**



The helium speech processing device employs a cassette tape recording system which makes a sentence-by-sentence or phrase-by-phrase recording of the speech of a helium gas breathing diver and replays this recording at a reduced speed to provide increased intelligibility. The speed of replay is controllable by the diver and automatically in response to a depth sensing mechanism as well as a speed range control mechanism which is pre-set in dependence upon a particular gas mixture that the user is breathing.

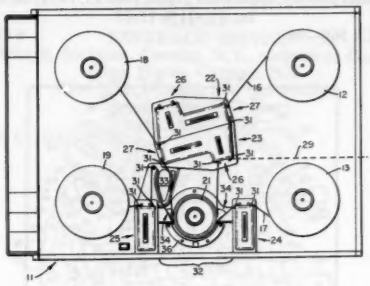
3,813,688

MAGNETIC TAPE DUPLICATOR

Dale P. Dolby, Los Altos, and Heinrich K. Sandrock, Palo Alto, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Mar. 29, 1971, Ser. No. 128,996
Int. Cl. G11b *5/02*
U.S. Cl. 360—17 **5 Claims**

A master tape and a copy tape are brought into superimposed adhesion contact upon a rotating drive drum located within a signal transfer excitation zone that is defined by vacuum columns for isolating the tapes from outside disturbances such as different speed or tension changes that would cause the tapes to slip or misregister with respect to one another while the transfer is taking place. The necessary pressure for the adhesion contact is provided by air pressure means clamping the tapes against the drum. The disturbances introduced by the drum, if any, affect both tapes to the same



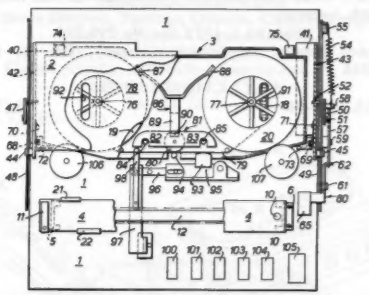
degree, and the air pressure means produces no disturbances, so that the tapes remain in perfect registration during the transfer process.

3,813,689

TAPE MACHINE WITH INDEX MEMBERS TO CONTROL TAPE TRANSPORT

Zoltan Josef Marfy, Hounslow, England, assignor to Clark and Smith Industries Limited, Wallington, Surrey, England

Filed Oct. 4, 1972, Ser. No. 294,827
Claims priority, application Great Britain, Oct. 4, 1971, 46142/71
Int. Cl. G11b *15/22, 27/34*
U.S. Cl. 360—74 **8 Claims**



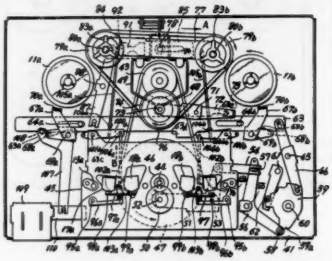
A tape displacement indicator assembly for a tape machine, particularly a magnetic record tape machine, which comprises two index members movable along adjacent paths on a scale and each arranged to be manually movable to any indicating positions on the scale, one of the index members being coupled with the tape drive mechanism of the machine for displacement in accordance with displacement of tape on the machine, and means responsive to movement of the index members to a predetermined relative position to de-actuate the tape drive mechanism of the machine. Also disclosed is a magazine-type magnetic record tape machine with a tape magazine loading tray and mechanism for use with a tape magazine having a pinch wheel mounted in the magazine.

3,813,690

TAPE RECIPROCATING DRIVE TYPE TAPE RECORDER

Toshiichiro Oka, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama City, Kanagawa-ken, Japan

Filed June 15, 1972, Ser. No. 263,289
Claims priority, application Japan, June 15, 1971, 46-42833
Int. Cl. G11b 15/26
U.S. Cl. 360—90 6 Claims



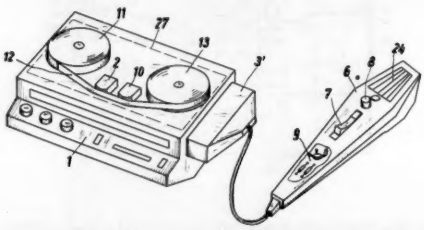
A tape reciprocating drive type tape recorder has two pulleys having a suitable degree of frictional resistance and rotatably mounted on the opposite ends of a swinging arm in a manner to confront two reel bases and means for transmitting rotational power in a regular direction or reverse direction to the two pulleys. The swinging arm swings in accordance with the rotational direction of the two pulleys, whereby, in accordance with the rotational direction thereof, one of the pulleys presses against the corresponding reel base to transmit rotational power thereto. By merely changing over the rotational direction of the pulleys, the two pulleys can be selectively caused to press against the reel bases.

3,813,691

OFFICE DICTATION/TRANSCRIPTION MACHINE

Reinhold Emmert, Furth, Germany, assignor to Grundig E.M.V. Elektro Mechanische Versuchsanstalt Max Grundig, Furth, Germany

Filed Oct. 2, 1972, Ser. No. 297,259
Claims priority, application Germany, Oct. 1, 1971, 2149046
Int. Cl. G11b 15/10, 27/36
U.S. Cl. 360—90 6 Claims



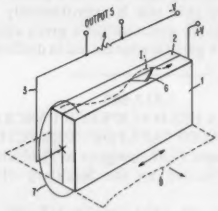
An office dictation/transcription machine of the type employing magnetic tape as the sound carrier. The machine has a main unit provided with erasing and playback/record heads and has a plurality of jacks electrically connected to the playback/record head and to the erasing head for the operative connection to the main unit of an accessory capable of activating the erasing head.

3,813,692

INTERNALLY BIASED MAGNETORESISTIVE MAGNETIC TRANSDUCER

George W. Brock, Boulder, and Frank B. Schelledy, Longmont, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 11, 1972, Ser. No. 296,742
Int. Cl. G11b 5/30; H01c 7/16
U.S. Cl. 360—113 14 Claims



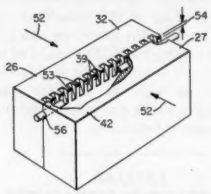
A magnetic transducer exhibiting the magnetoresistive (MR) effect includes at least two thin film layers. An MR film in electrical control with a higher resistivity layer is magnetically biased by a portion of the MR sense current shunted through the nonmagnetic layer.

3,813,693

MAGNETIC HEAD WITH PROTECTIVE POCKETS OF GLASS ADJACENT THE CORNERS OF THE GAP

Beverly R. Gooch, Sunnyvale, and Edward Schiller, San Jose, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Continuation of Ser. No. 67,784, Aug. 28, 1970, abandoned.
This application June 23, 1972, Ser. No. 265,939
Int. Cl. G11b 5/28
U.S. Cl. 360—119 8 Claims



In a magnetic transducer formed of ferrite material, the detrimental effects of edge chipping adjacent the non-magnetic record/reproduce gap are avoided by forming protective pockets of glass material adjacent both corners of the gap. In this manner, otherwise vulnerable portions of the gap are isolated from chipping or granular pull-outs which tend to occur along the edges of magnetic head tips formed of ferrites or other similarly brittle magnetic materials.

DESIGNS

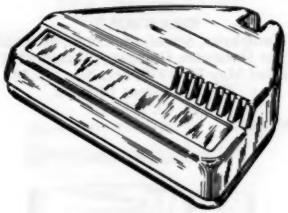
MAY 28, 1974

231,683
DISPLAY STAND FOR STRIP MATERIAL
James T. Rash, Las Vegas, Nev., and Gary Peacock, Marion, Va., assignors to Mouldings, Inc., Marion, Va.
Filed Oct. 30, 1972, Ser. No. 301,759
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—188

231,684
CONDIMENT DISPENSER
Theodore M. Reyda, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Mar. 19, 1973, Ser. No. 342,760
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—54

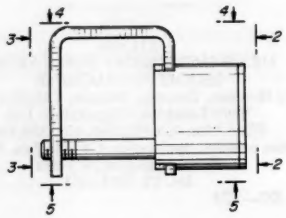
231,685
BEVERAGE SERVER
Glenn B. Beckman, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Mar. 19, 1973, Ser. No. 342,762
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—59

231,686
HEAD IMPLEMENT FOR CARPET SHAMPOO MACHINE
C. Bruce Hewson, Toronto, Ontario, Canada, assignor to York Lambton Corporation Ltd.
Filed Mar. 7, 1973, Ser. No. 338,948
Claims priority, application Canada Jan. 30, 1973
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D7—173



231,687
SHAVER ASSEMBLING TOOL
Edward J. Vrabel, Stratford, Conn., assignor to Sperry Rand Corporation, New York, N.Y.
Filed Oct. 12, 1972, Ser. No. 299,732
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—14

231,688
U-SHAPED KEEPER LOCK FOR SEMI TRAILERS AND THE LIKE
John R. Gerlach, Monterey Park, Calif., assignor to Emhart Corporation, Bloomfield, Conn.
Filed Mar. 19, 1973, Ser. No. 342,732
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—114

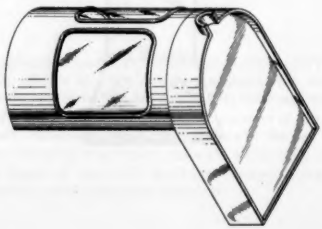


231,689
DRAWBOLT
John B. Humphries, Stamford, Conn., assignor to The Excelsior Hardware Company, Stamford, Conn.
Filed May 11, 1973, Ser. No. 359,343
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—127

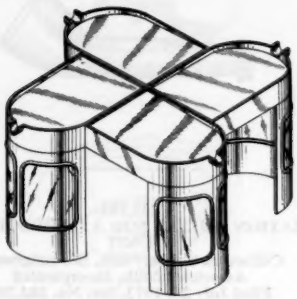
231,690
CAN OR SIMILAR ARTICLE
Thomas R. Stanley, Downers Grove, and Carmen T. Mascia, Westmont, Ill., assignors to Continental Can Company, Inc., New York, N.Y.
Filed July 17, 1972, Ser. No. 272,274
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—216

231,691
CAN OR SIMILAR ARTICLE
Thomas R. Stanley, Downers Grove, and Carmen T. Mascia, Westmont, Ill., assignors to Continental Can Company, Inc., New York, N.Y.
Filed July 17, 1972, Ser. No. 272,275
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—216

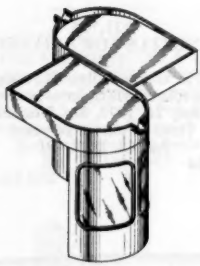
231,692
SHELTER
Richard Dattner, 180 Cabrini Blvd., New York, N.Y. 10033
Filed Sept. 11, 1972, Ser. No. 287,932
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 D



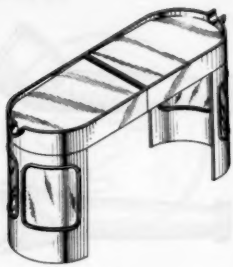
231,693
SHELTER
Richard Dattner, 180 Cabrini Blvd.,
New York, N.Y. 10033
Filed Sept. 11, 1972, Ser. No. 287,941
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 D



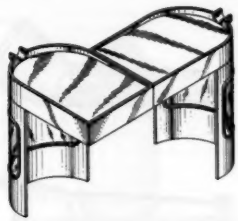
231,694
SHELTER
Richard Dattner, 180 Cabrini Blvd.,
New York, N.Y. 10033
Filed Sept. 11, 1972, Ser. No. 287,942
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 D



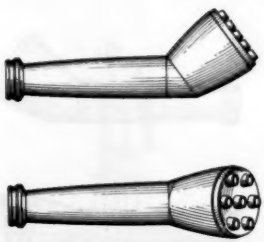
231,695
SHELTER
Richard Dattner, 180 Cabrini Blvd.,
New York, N.Y. 10033
Filed Sept. 11, 1972, Ser. No. 287,943
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 D



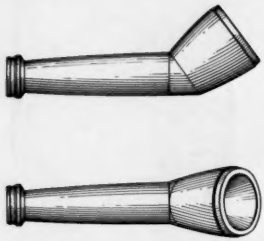
231,696
SHELTER
Richard Dattner, 180 Cabrini Blvd.,
New York, N.Y. 10033
Filed Sept. 11, 1972, Ser. No. 287,944
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 D



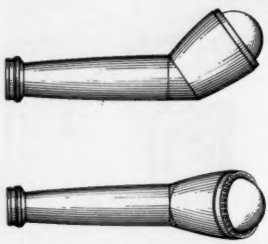
231,697
AERATION NOZZLE FOR A HYDROTHERAPY UNIT
Clifford E. Grube, Niles, Ill., assignor to Associated Mills, Incorporated
Filed July 26, 1973, Ser. No. 382,704
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—34



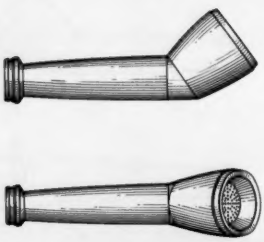
231,698
AERATION NOZZLE FOR A HYDROTHERAPY UNIT
Clifford E. Grube, Niles, Ill., assignor to Associated Mills, Incorporated
Filed July 26, 1973, Ser. No. 382,705
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—34



231,699
AERATION NOZZLE FOR A HYDROTHERAPY UNIT
Clifford E. Grube, Niles, Ill., assignor to Associated Mills, Incorporated
Filed July 26, 1973, Ser. No. 382,706
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—34

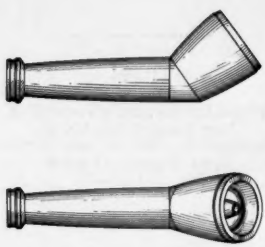


231,700
AERATION NOZZLE FOR A HYDROTHERAPY UNIT
Clifford E. Grube, Niles, Ill., assignor to Associated Mills, Incorporated
Filed July 26, 1973, Ser. No. 382,707
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—34



231,701
AERATION NOZZLE FOR A HYDROTHERAPY UNIT
Clifford E. Grube, Niles, Ill., assignor to Associated Mills, Incorporated
Filed July 26, 1973, Ser. No. 382,708
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—34

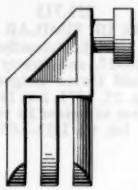
231,702
AERATION NOZZLE FOR A HYDROTHERAPY UNIT
Clifford E. Grube, Niles, Ill., assignor to Associated Mills, Incorporated
Filed July 26, 1973, Ser. No. 382,709
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—34



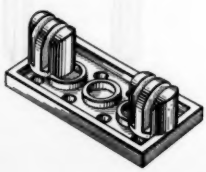
231,703
AERATION NOZZLE FOR A HYDROTHERAPY UNIT
Clifford E. Grube, Niles, Ill., assignor to Associated Mills, Incorporated
Filed July 26, 1973, Ser. No. 382,710
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—34

231,704
WHIRLING DEVICE FOR DEMONSTRATING PHYSICS
Kenneth Earl Wale, 62 Armstrong Ave., Hamilton 31, Ontario, Canada
Filed Nov. 27, 1972, Ser. No. 309,687
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D25—1 R

231,705
JOINT FOR A TOY FIGURE
Godtfred Kirk Christiansen, Billund, Denmark, assignor to Interlego, A.G., Zurich, Switzerland
Filed Apr. 13, 1972, Ser. No. 243,904
Claims priority, application Denmark Oct. 15, 1971
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 FF



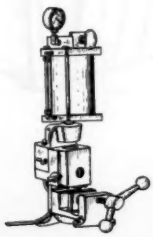
231,706
CONNECTING MEMBER FOR A TOY FIGURE
Godtfred Kirk Christiansen, Billund, Denmark, assignor to Interlego, A.G., Zurich, Switzerland
Filed Apr. 13, 1972, Ser. No. 243,908
Claims priority, application Denmark Oct. 15, 1971
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 GG



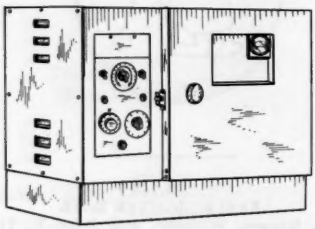
231,707
RETURN TOP
Leroy W. Mason, Werner F. Heliman, and Gerald A. Rau, Baraboo, Wis., assignors to Flambeau Products Corporation
Filed Apr. 9, 1973, Ser. No. 349,851
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AH

231,708
TABLE LIGHTER BASE
Peter C. Kenney, Wellesley, and Peter V. Tremblay, Hingham, Mass., assignors to The Gillette Company, Boston, Mass.
Filed Nov. 22, 1972, Ser. No. 308,818
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D48—27 R

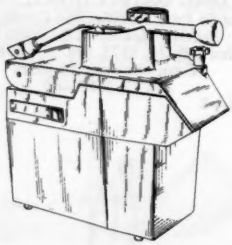
231,709
PNEUMATICALLY OPERATED INJECTION MOLDING INSTRUCTIONAL DEVICE
Francis Paul Pracilio, 966 Grant Ave., Pelham Manor, N.Y. 10803
Filed July 28, 1972, Ser. No. 276,139
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D54—8



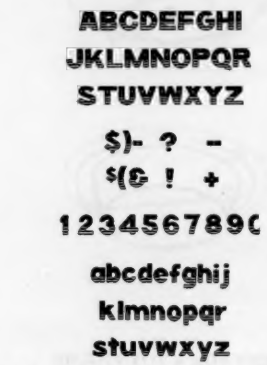
231,710
ROTATIONAL MOLDING INSTRUCTION DEVICE
Francis Paul Pracilio, 966 Grant Ave., Pelham Manor, N.Y. 10803
Filed July 28, 1972, Ser. No. 276,140
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D54—8



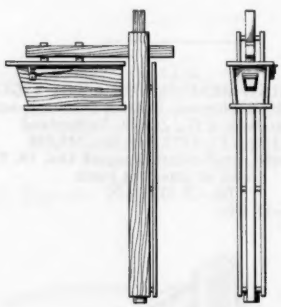
231,711
VEGETABLE CUTTER
Oliver Camille Henri Prevot, 1 Rue d'Assen, Aubusson, France
Continuation-in-part of abandoned design application Ser. No. 153,922, June 16, 1971. This application Apr. 25, 1973, Ser. No. 354,165
Claims priority, application France Dec. 26, 1970
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D55—1 A



231,712
TYPE FONT
John E. Snitzel, Rochester, N.Y., assignor to The Singer Company, New York, N.Y.
Filed May 26, 1972, Ser. No. 257,480
Term of patent 14 years
Int. Cl. D18—*03*
U.S. Cl. D64—12 B



231,713
MAIL BOX OR SIMILAR ARTICLE
Duane H. Nesbitt, 2817 E. Serendipity Circle, Colorado Springs, Colo. 80917, and Jimmy P. Hayes, Colorado Springs, Colo.; said Hayes assignor to said Nesbitt
Filed Aug. 27, 1971, Ser. No. 175,793
Term of patent 14 years
Int. Cl. D31—*00*
U.S. Cl. D74—9 R



231,714
IDENTIFICATION CLIP
Michael D. Arthur, 70 Lexington Drive, Beaconsfield, Quebec, Canada
Filed Aug. 21, 1972, Ser. No. 282,290
Claims priority, application Canada Feb. 21, 1972
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—2 B

231,715
ASH-TRAY
Walter Fieni, Paris, France, assignor to Societe Anonyme Francais du Ferodo, Paris, France
Filed Dec. 20, 1972, Ser. No. 316,720
Claims priority, application France June 23, 1972
Term of patent 14 years
Int. Cl. D27—*03*
U.S. Cl. D85—2 J

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 28TH DAY OF MAY, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A-Lok Corporation: *See—*
Ditcher, John, 3,813,107.

Aaron, Herbert S.; and Reiff, Louis P., to United States of America, Army. Catalytic hydrogenation of keto groups in heteropolycyclic compounds. 3,813,403, Cl. 260-292.000.

AB Centralsug: *See—*
Ekstrom, Per-Olof, 3,813,128.

AB Nora-Gomcx: *See—*
Danielsen, Bo Sixten, 3,812,755.

AB Svensk Varmematning C.B-System: *See—*
Karlsson, Stig Ingvar, 3,812,713.

Abbott, William J.; and Rankin, Malcolm, to Witco Chemical Corporation. Damping media for energy absorbing devices. 3,812,937, Cl. 188-266.000.

Abe, Yasunori; Yamane, Nobuo; Itoh, Kensaku; Ishida, Shuichi; and Kobayashi, Hisabumi, to Nippon Kayaku Co., Ltd. p-Nitrodiphenyl ethers. 3,813,444, Cl. 260-607.00a.

Abe, Yoshihiko, to Mitsubishi Seiko Kabushiki Kaisha. Corrosion-resisting steel. 3,813,240, Cl. 75-126.00d.

Abernathy, William J.; and Snoddy, Lowell G., to United States of America, National Aeronautics and Space Administration. Insert facing tool. 3,813,183, Cl. 408-80.000.

Abex Corporation: *See—*
Ratkowski, Thomas A., 3,812,608.

Abrams, Richard Lee; and Glass, Alastair Malcolm, to Bell Telephone Laboratories Incorporated. Pyroelectric devices. 3,813,550, Cl. 250-338.000.

Abrex Specialty Coatings Ltd.: *See—*
Crowne, Francis R.; Tan, Chiong-Heng; and Vandenbroek, Martin A., 3,813,327.

ABU Aktiebolag: *See—*
Svensson, Hugo Ragnvald, 3,812,940.

ACF Industries, Incorporated: *See—*
Kolb, John P.; and Powell, Richard G., 3,812,980.

Acieries de Gennevilliers Anciens: *See—*
Bommart, Patrick Theodore, 3,813,502.

Adachi, Yoshiaki: *See—*
Hayashi, Yasuo; and Adachi, Yoshiaki, 3,813,424.

Adams, Harold W., to Reynolds Metals Company. Steel supported aluminum overhead conductors. 3,813,481, Cl. 174-130.000.

Adams, William, & Company Limited (Manufacturing Division): *See—*
Salmon, Paul Mervyn, 3,812,809.

Addressograph-Multigraph Corporation: *See—*
Ziska, John C., 3,812,778.

Adkins, Russell M., to Westinghouse Air Brake Company. Microminiature polarized relay. 3,813,620, Cl. 335-78.000.

Advance Housing Corporation: *See—*
Lerch, Adolph F.; Otis, Nick C.; and Montgomery, John D., 3,812,638.

Aerojet-General Corporation: *See—*
Cohen, Joseph; and Scotoni, Ralph, Jr., 3,812,785.

Agfa-Gevaert Aktiengesellschaft: *See—*
Geyken, Erwin; Dawidowitsch, Peter; and Ertl, Franz, 3,812,870.
Schranz, Karl-Wilhelm; Hunicke, Wolfgang; Brus, Gerhard H.; Schon, Erwin; Busch, Josef; and Bruck, Herbert, 3,813,246.
Wagensonner, Eduard; and Winkler, Alfred, 3,813,680.
Zahn, Wolfgang; Fergg, Berthold; and Knapp, Walter, 3,813,158.

Agfa-Gevaert N.V.: *See—*
Laridon, Urbain Leopold; and Van Den Houte, Jozef Willy, 3,813,245.
Mannens, Marc Godfried; Jaeken, Jan; Janssens, Wilhelmus; and Priem, Jan Jozef, 3,813,255.

Aiki, Kunio: *See—*
Umeda, Jun-Ichi; Aiki, Kunio; Kurata, Kazuhiro; and Kusumoto, Hazime, 3,813,587.

Aisin Seiki Kabushiki Kaisha: *See—*
Inada, Masami, 3,813,130.

Aizu, Keiichiro: *See—*
Kumada, Akio; Ashida, Sakichi; Aizu, Keiichiro; and Koga, Masaahi, 3,813,144.

Ajamie, Amil J.: *See—*
Davidsohn, Uryon S.; Short, John P.; Combs, Clyde, Jr.; and Guerra, Edward E., 3,813,584.

Ajax Magnethermic Corporation: *See—*
Duca, William J., 3,813,470.

Akiyama, Tadashi, to Yamatake-Honeywell Company Limited. Yarn break detection system. 3,813,583, Cl. 317-148.50b.

Aktiebolaget Electrolux: *See—*
Klingspor, Christian Staffansson, 3,813,054.

Aktiebolaget Svenska Flaktfabriken: *See—*
de Feudis, Sergio, 3,813,127.
Westergren, Folke, 3,812,904.

Albrecht, Peter M., to National Cash Register Company, The. Circuit for measuring and evaluating optical radiation. 3,813,540, Cl. 250-206.000.

Albrecht, Raymond E.; Curran, Bernard E.; and Lindner, Robert G., to Robertson, H. H., Company. Sheet metal decking unit and composite floor construction utilizing the same. 3,812,636, Cl. 52-334.000.

Alexander, Doyle L.: *See—*
Shofner, Don L.; and Alexander, Doyle L., 3,813,212.

Alexander Manufacturing Company: *See—*
Heine, Charles A., 3,812,741.

Alger, Carl E., to Oklahoma Tool & Supply Company. Carpenter's tool. 3,813,081, Cl. 254-131.000.

Allan, George Graham, to Weyerhaeuser Company. Sustained release pesticide compositions and method of using. 3,813,236, Cl. 71-94.000.

Allen, Archelaius Dawson, to Dobson, Gullick, Limited. Mine roof supports. 3,812,681, Cl. 61-45.00d.

Allen, Howard John Brandsom; and Johnston, James Meill, to Microwave and Electronic System Limited. Monitoring systems and apparatus therefor. 3,813,655, Cl. 340-151.000.

Allen, John K., to Standard Oil Company (Indiana). Antimony tallate catalysis of foams prepared from carboxy-containing adduct polyols. 3,813,355, Cl. 260-2.5ab.

Allied Chemical Corporation: *See—*
Ryers, Arnold L., 3,813,464.
Wright, William Howell; Bingham, Alex John; and Fox, William Albert, 3,813,366.

Allis-Chalmers Corporation: *See—*
Drewry, Hugh S., 3,813,632.
Kemnitz, Robert H.; and Pollak, Robert J., 3,813,046.
Rockwell, Harvey W.; and Ringland, William L., 3,812,928.
Temple, William F.; and Johnston, David K., 3,813,184.
Torrence, James D.; and Graves, Fred L., 3,813,047.

Allister Manufacturing Company, Inc.: *See—*
Ellmore, John W., 3,813,590.

Allmanna Svenska Elektriska Aktiebolaget: *See—*
Englund, Hakan; Eriksson, Ronny; and Nilsson, Bengt, 3,812,721.

Alpers, Frederick C., to United States of America, Navy. High resolution range tracking circuit. 3,813,670, Cl. 343-7.300.

Alps Electric Co., Ltd.: *See—*
Okazaki, Mitsunari, 3,813,615.

Alum Elec Structures, Inc.: *See—*
Priest, Charles E., 3,813,179.

Aluminum Company of America: *See—*
Willis, Wilburn C., 3,812,990.

Amaroso, James R.: *See—*
Coppock, Walter J.; Amaroso, James R.; and Griffith, John Q., III, 3,813,338.

American Cyanamid Company: *See—*
Coscia, Anthony Thomas; and Williams, Laurence Lyman, 3,813,362.

American Flange & Manufacturing Co. Inc.: *See—*
Woif, Edward M.; and Koll, Stanley J., 3,812,992.

American Home Products Corporation: *See—*
Douglas, George H.; Faust, Warren R.; and Smith, Herchel, 3,813,420.
McKinley, Wayne A.; and McGregor, William H., 3,813,382.
Mukai, Cromwell D.; and Weinstein, Bernard, 3,813,343.
Sellstedt, John H.; Teller, Daniel M.; and Guinosso, Charles J., 3,813,386.

American Home Products Corporation, mesne: *See—*
Henniger, Peter Wolfgang, 3,813,385.

American Screen Process Equipment Company: *See—*
Cobb, Clyde C., 3,812,779.

Amerola Products Corporation: *See—*
Merola, Anthony, 3,813,090.

Ametek, Inc.: *See—*
Raznov, Jerry L., 3,813,066.

Ampex Corporation: *See—*
Dolby, Dale P.; and Sandrock, Heinrich K., 3,813,688.
Gooch, Beverly R.; and Schiller, Edward, 3,813,693.

Amrogowicz, Erich. Inlet and outlet closure. 3,812,998, Cl. 220-30.500.

Anchor Hocking Corporation: *See—*
Lush, John S., 3,812,949.

Anderson, Daniel J. Smoking habit control kit. 3,812,865, Cl. 131-171.00a.

Anderson, Ernest David; and Cowan, Larry Clyde, to Leesona Corporation. Fluid responsive control valves. 3,812,881, Cl. 137-596.140.

Anderson, Norman G., to United States of America, Atomic Energy Commission. Rotor having sample holding means. 3,813,031, Cl. 233-26.000.
Anderson, Richard John: *See—*
Parfomak, Walter; Anderson, Richard John; and Levine, Alfred, 3,813,665.
Anderson, Robert J., to Parachem Corporation. Wound dressings. 3,813,466, Cl. 424-28.000.
Anderson, Ronald Vernon, to International Telephone and Telegraph Corporation. High voltage in-line disconnect switch. 3,813,504, Cl. 200-48.00r.
Ando, Shigemi, to Mitsui Shipbuilding and Engineering Co., Ltd. Cargo vessel for carrying liquid cargo. 3,812,807, Cl. 114-74.00r.
Andreaggi, Joseph R., to Weston Instruments, Inc. Portable instrument. 3,813,004, Cl. 220-96.000.
Andrews, Kenneth John Maynard; and Tong, Brian Peter, to Hoffmann-La Roche Inc. Pyrimidotriazines. 3,813,393, Cl. 260-249.500.
Andrews Paper & Chemical Co., Inc.: *See—*
Muller, Peter, 3,813,261.
Anheuser-Busch, Incorporated: *See—*
Shieh, Kenneth K.; Donnelly, Brendan J.; and Lee, Howard A., 3,813,320.
Stubits, Marcella C., 3,813,221.
Anritsu Electric Co., Ltd.: *See—*
Kurosawa, Koichi; and Okubo, Ko, 3,813,483.
Anthony, Roger B.: *See—*
Brebik, Stephen J.; and Anthony, Roger B., 3,813,637.
Antonevich, John N., to Blackstone Corporation. Electromechanical oscillator. 3,813,616, Cl. 331-116.00r.
Application des Gaz: *See—*
Remane, Roger, 3,812,645.
Aquarian-Age-Inventor, Inc.: *See—*
Capper, Keith C., 3,813,075.
Aragozzini, Fabrizio: *See—*
Craveri, Renato; Manachini, Luigi; and Aragozzini, Fabrizio, 3,813,319.
Arai, Kosuke: *See—*
Watabe, Kaname; Arai, Kosuke; Taneda, Yasuo; and Naka, Kiyomi, 3,813,162.
Aramaki, Kuninori; Kawakami, Hiroshi; and Kawaguchi, Yasuharu, to Bridgestone Tire Company Limited. Device for recovering floating matter from water surface. 3,812,968, Cl. 210-242.000.
Arbenz, Heinz; and Caspar, Jakob, to Swiss Aluminum Ltd. Apparatus for preparing open sand molds suitable for casting large metal plates. 3,812,902, Cl. 164-208.000.
Arcata Graphics Corporation: *See—*
Swann, Clifford; and Siminski, Gerald W., 3,813,052.
Arita, Koshei. Apparatus for measuring the temperature of rotary bodies. 3,813,518, Cl. 219-471.000.
Armbruster, Frederick C.; Heady, Robert E.; and Cory, Robert P., to CPC International Inc. Production of xylose (dextrose) isomerase enzyme preparations. 3,813,318, Cl. 195-31.00f.
Armour and Company: *See—*
Drain, Albert Sterling, 3,813,467.
Armstrong, George W. Flow control valve and control system therefor. 3,813,015, Cl. 222-445.000.
Arndt, Werner. Knitted edging for a fabric or garment. 3,812,692, Cl. 66-172.00r.
Arnold, Orlan M.; and Vancini, Carlo A., to Peabody Engineering Corporation. Gas cleaning apparatus. 3,812,658, Cl. 55-239.000.
Arnold, Robert J.: *See—*
Gattuso, Marion J.; and Arnold, Robert J., 3,813,332.
Arps, Ronald Barthold, to International Business Machines Corporation. System for compression of digital data. 3,813,485, Cl. 178-6.800.
Asano, Hiroaki: *See—*
Kikuchi, Makoto; Asano, Hiroaki; Otsu, Ikuo; and Saeki, Toyoaki, 3,812,623.
Asher, John W.; and Herczog, Andrew, to Corning Glass Works. Frit capacitor and method for obtaining the dielectric constant thereof. 3,812,688, Cl. 65-18.000.
Ashida, Sakichi: *See—*
Kumada, Akio; Ashida, Sakichi; Aizu, Keiichiro; and Koga, Masaahi, 3,813,144.
Ashland Company of N. J., Inc.: *See—*
Kivlen, John A.; Orr, Richard L.; Chwab, William H.; and Macindoe, George F., 3,812,663.
Ashton, Larry J.: *See—*
Block, Leo; Ashton, Larry J.; and Vodraska, Kenneth F., 3,812,872.
Asta-Werke Aktiengesellschaft Chemische Fabrik: *See—*
Vogelsang, Dietrich; Scheffler, Gerhard; Brock, Norbert; and Lenke, Dieter, 3,813,384.
Ateliers Reunis Societe Anonyme: *See—*
Joseph, Raymond, 3,812,999.
Atlantic Richfield Company: *See—*
Curtin, Daniel J., 3,813,030.
Frisch, Kurt C.; Reegen, Sidney; and Dieter, Jerry A., 3,813,365.
Sheldahl, David B., 3,813,337.
Atlas Copco Aktiebolag: *See—*
Westerberg, Sven Peter Jonas, 3,812,744.
Auber, Benjamin B., to Columbia Broadcasting System, Inc. Quadraphonic reproducing system. 3,813,494, Cl. 179-1.0gq.
Auerbach, Melvin: *See—*
Saltman, William M.; and Auerbach, Melvin, 3,813,455.
Aumuller, Walter; Weyer, Rudi; and Heerdt, Ruth, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Benzenésulfonyl-semicarbazides and process for their manufacture. 3,813,398, Cl. 260-283.0sa.
Auphan, Michel Joseph: *See—*
Perilhou, Jean Robert; and Auphan, Michel Joseph, 3,812,597.
Auray, Didier Henri; Downey, Richard T.; and Macomber, Robert I. Desoldering device. 3,813,023, Cl. 228-19.000.
Austral Incinerator Corporation: *See—*
Bowles, Harry L., Jr., 3,812,795.
Auto-Place, Inc.: *See—*
Potter, Ronald D., 3,812,981.
Automated Equipment Corporation: *See—*
Radobenko, William, 3,813,022.
Automatic Timing & Controls, Inc.: *See—*
Ross, Donald, 3,813,668.
Automobiles Peugeot: *See—*
Quemerais, Philippe, 3,812,943.
Avco Everett Research Laboratory, Inc.: *See—*
Staal, John V., 3,813,511.
Aya, Masahiro; Miyamoto, Masao; Fukawawa, Nobuo; and Ohsuga, Shigeki, to Bayer Aktiengesellschaft. Thienylmethyl-N,N-disubstituted-carbamates. 3,813,405, Cl. 260-293.680.
Baburov, Valery Efremovich: *See—*
Rogalsky, Anatoly Viktorovich; Markevich, Vitaly Mikhailovich; Kheifets, Georgy Naumovich; Zaichenko, Jury Leonidovich; Baburov, Valery Efremovich; Pavlovsky, Vladimir Petrovich; Golban, Eduard Vasilievich; Pechennik, Leonid Naumovich; Knyazhinsky, Zakhar sipovich; Bogatov, Nikolai Alexandrovich; Raichuk, Jury Isaakovich; Zaritsky, Vaktor Nikolaevich; and Grodzitsky, Evgeny Fedorovich, 3,812,909.
Bach, Nicholas J.; and Farkas, Eugene, to Lilly, Eli, and Company. Preparation of phenolic ethers. 3,813,419, Cl. 260-397.50a.
Back, Stig Ove: *See—*
Mihic, Wlajko; and Back, Stig Ove, 3,812,560.
Backstrom, Sven Hjalmar; and Hellman, Per, to Stora Kopparbergs Bergslags Aktiebolag. Device for manufacture of a powder by atomizing a stream of molten metal. 3,813,196, Cl. 425-7.000.
Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
Klocke, Hans Joachim; Stockburger, Dieter; Gierth, Volker; and Zeitler, Gerhard, 3,813,375.
Badische Anilin-& Soda-Fabrik Aktiengesellschaft: *See—*
Fischer, Adolf, 3,813,237.
Baker, Clinton F. Harvesting machine with crop saving attachment. 3,812,661, Cl. 56-14.400.
Bakos, Peter; and Knight, Diana J., to International Business Machines Corporation. Method for stripping resists from substrates. 3,813,309, Cl. 156-2.000.
Balchunas, Charles A., to General Electric Company. Wall plug-in time switch. 3,813,641, Cl. 339-170.000.
Baldwin, Mart G.; and Chaille, James L., to United States of America, Army, mesne. High burning rate NF propellants. 3,813,305, Cl. 149-19.300.
Baldyga, Eugene P.; and Griesing, John E., to Monsanto Company. Supporting a thin walled bottle during capping. 3,812,646, Cl. 53-42.000.
Banko, Anton, to Surgical Design Corporation. System for controlling fluid and suction pressure. 3,812,855, Cl. 128-276.000.
Barmag Barmer Maschinenfabrik Aktiengesellschaft: *See—*
Schippers, Heinz, 3,812,664.
Barnard, Benjamin R., to Maxson Corporation, The. Adjustable flat car. 3,812,791, Cl. 105-393.000.
Barnes, John Grober; Bizon, Emil; Murray, Charles Robertson; Rowley, Edward Kenneth; and Waugh, Clayton Thomas, to Canadian Industries Limited. Manufacture of plastic bags. 3,812,769, Cl. 93-35.00r.
Barnes, John I., III. Fine grade indicating system. 3,813,181, Cl. 404-84.000.
Barnes, William Geddes: *See—*
Ramsay, Melvin Murray; Barnes, William Geddes; and Bedgood, Michael Albert, 3,813,489.
Barnhart, John T. Air cleaning device. 3,812,656, Cl. 55-220.000.
Barnhart, Morris W.; and Russ, John C., to Edax International, Inc. X-ray scan area mapping system. 3,813,545, Cl. 250-306.000.
Barratt, Robert O.: *See—*
Polcer, John; Barratt, Robert O.; and Roberts, John, 3,812,824.
Polcer, John; Barratt, Robert O.; and Roberts, John, 3,812,825.
Barron, Charles D., to Jackson, Byron, Inc. Force measuring weighing device. 3,812,723, Cl. 73-434.000.
Barron, David Michael Arthur: *See—*
Smith, Robert William George; Barron, David Michael Arthur; and Wingrove, Arthur George, 3,813,058.
Barth, Ross E.: *See—*
Zahuranec, Emery J.; Bedo, Alfred; and Barth, Ross E., 3,812,963.
Bartlett, Kenneth G., to Singer Company, The. Digital high order interpolator. 3,813,529, Cl. 235-152.000.
Basiulis, Algerd, to Hughes Aircraft Company. Insulated cathode gun device. 3,813,571, Cl. 313-326.000.
Bastacky, Simon. Process for treating industrial wastes. 3,813,321, Cl. 204-149.000.
Battelle Development Corporation: *See—*
Stewart, Oliver M.; Maringer, Robert E.; and Mobley, Carroll E., Jr., 3,812,901.

Bauer, Friedrich, to Hoerbiger Ventilwerke Aktiengesellschaft. Compressor valve. 3,812,880, Cl. 137-516.150.

Bauger, Louis Jules: *See—*
Bouiller, Jean Georges; Gobin, Michel Roland; Lacroix, Armand Jean-Baptiste; and Bauger, Louis Jules, 3,813,185.

Bauger, Madeleine Henriette Aimee, and Olivier, Jeanne Denise: *See—*
Bouiller, Jean Georges; Gobin, Michel Roland; Lacroix, Armand Jean-Baptiste; and Bauger, Louis Jules, 3,813,185.

Baughman, Herbert W.; and Yetter, Harry G. Chisel plow. 3,812,919, Cl. 172-328.000.

Bauman, Gunther; Schmidt, Peter; Eisele, Hermann; and Wahl, Josef, to Bosch, Robert, GmbH. Electronic fuel consumption meter. 3,812,710, Cl. 73-114.000.

Baumann, Dieter: *See—*
Habermeier, Jurgen; Porret, Daniel; and Baumann, Dieter, 3,813,352.

Baumann, Hans D.; and Keith, Gareth Allan, to Masoneilan International, Inc. Quick change apparatus for effecting gas flow pressure reduction with low noise generator. 3,813,079, Cl. 251-127.000.

Baur, Hellmuth; and Schraft, Horst, to Werner & Pfleiderer, Firma. Continuous tunnel oven for baking and/or drying. 3,813,216, Cl. 432-230.000.

Baur, Rudolf: *See—*
Hofling, Erich; Baur, Rudolf; and Bloeck, Siegfried, 3,813,303.

Bayer Aktiengesellschaft: *See—*
Aya, Masahiro; Miyamoto, Masao; Fukawawa, Nobuo; and Ohsuga, Shigeki, 3,813,405.
Bock, Eugen; Dollhausen, Manfred; and Muller-Albrecht, Horst, 3,813,380.
Colln, Reimer, 3,813,457.
Heine, Hans-Georg; Fischler, Hans-Michael; and Hartmann, Willy, 3,813,432.
Sajben, Johannes Otto; Lippert, Axel; Stumpen, Klaus; and Grunewald, Rainer, 3,812,885.

Beach, William A.; and Schlauch, Richard M., to Sybron Corporation. Settling rate tester. 3,812,966, Cl. 210-70.000.

Beck, Martin. Ganged sod harvesting apparatus. 3,812,918, Cl. 172-19.000.

Beck, Roger W.; and Yoder, Douglas J., to General Motors Corporation. Process for etching silicon wafers. 3,813,311, Cl. 156-17.000.

Bedgood, Michael Albert: *See—*
Ramsay, Melvin Murray; Barnes, William Geddes; and Bedgood, Michael Albert, 3,813,489.

Bedo, Alfred: *See—*
Zahuranec, Emery J.; Bedo, Alfred; and Barth, Ross E., 3,812,963.

Beegle, Donald W.: *See—*
Salmon, David; Weirzbicke, Edward J.; Langston, Benny; and Beegle, Donald W., 3,813,238.

Beer, Emanuel E.; and Jeltrup, Eric H., to Singer Company, The. Tilt limit detecting apparatus. 3,813,556, Cl. 250-575.000.

Beets, Roland H. C.: *See—*
Fader, John H.; Keijzer, Johan H.; Graulus, Marcel J. R.; and Beets, Roland H. C., 3,812,938.

Bekedam, Martin. Closed condensate system. 3,813,037, Cl. 237-9.00r.

Bell & Howell Company: *See—*
Kral, Fred G., 3,813,521.

Bell, Lon E., to Technar Incorporated. Velocity responsive apparatus. 3,812,726, Cl. 73-503.000.

Bell Telephone Laboratories Incorporated: *See—*
Abrams, Richard Lee; and Glass, Alastair Malcolm, 3,813,550.
Danielmeyer, Hans Guenter; and Weber, Heinz Paul, 3,813,613.
Danylchuk, Irynej; Geusic, Joseph Edward; and Nelson, Terence John, 3,813,661.
Miller, Gabriel Lorimer; and Robinson, David Arthur Hall, 3,812,717.
Miller, Stewart Edward, 3,813,141.
Vazirani, Hargovind Nihchaldas, 3,813,322.

Bemiss, Robert P. Method of forming, filling and closing cartons, and specific cartons therefor. 3,812,641, Cl. 53-14.000.

Bendix Corporation, The: *See—*
Hoffman, Philip A.; and Davey, Frederick K., 3,812,712.
Knockeart, Ronald P., 3,813,140.
Parfomak, Walter; Anderson, Richard John; and Levine, Alfred, 3,813,665.
Rogne, Conrad O., Jr.; and Grant, Robert A., 3,813,126.
Troeger, Henry, 3,813,089.

Bendix Corporation, The, mesne: *See—*
Thorne-Booth, George M., 3,813,538.

Benerito, Ruth R.: *See—*
McKelvey, John B.; and Benerito, Ruth R., 3,813,421.

Benisek, Ladislav; Winterbottom, Kenneth; Shaw, Trevor; and Edmondson, Gerald Keith, to I.W.S. Nominee Company Limited and Ciba-Geigy AG. Process for modifying keratinous material, composition useful therein, and keratinous material bearing thereon said coposition. 3,813,220, Cl. 8-127.600.

Bennett, David F. Gas-liquid separator. 3,812,655, Cl. 55-204.000.

Bennett, Robert A., to Waterbury Lock & Specialty Co. Tape measuring unit and locking and releasing device therefor. 3,812,588, Cl. 33-138.000.

Benoiton, Norman L.; Tong, Jeffrey H. Y.; D'Iorio, Antoine; and Petitclerc, Jean C., to Canadian Patents and Development Limited. Resolution of racemates of ring-substituted phenylalanines. 3,813,317, Cl. 195-29.000.

Benson, Robert W.; and Chapman, James Ronald, to Thermo Electron Corporation. Stress gage. 3,812,709, Cl. 73-67.50r.

Benteler, Helmut; Hartmann, Franz-Josef; and Hefendehl, Heinz. Multi-pass method and apparatus for cold-drawing of metallic tubes. 3,812,702, Cl. 72-283.000.

Benz, Ernst. Pickup needle. 3,813,101, Cl. 274-38.000.

Berends, Howard P., to Holland Hitch Company. Inverted fifth wheel coupler. 3,813,114, Cl. 280-434.000.

Berger, Abe: *See—*
De Zuba, George P.; Berger, Abe; and Selin, Terry G., 3,813,364.

Berman, Arnold: *See—*
Wachs, Marvin Richard; and Berman, Arnold, 3,813,497.

Bernazzani, Richard J., to United States of America, Army. Folding wire handle for cups. 3,813,003, Cl. 220-94.00r.

Bernstein, Bertram L. Waist-supporting garment. 3,812,862, Cl. 128-578.000.

Bertling, Rudolph B.; and Kerr, Edward R., to Pillsbury Company, The. Apparatus for stacking and packaging food products. 3,812,647, Cl. 53-62.000.

Bezzubov, Kheino Ioanovich: *See—*
Koost, Oliver Augustovich; and Bezzubov, Kheino Ioanovich, 3,812,699.

Biancamaria, Joseph, to Lhomme (Societe Anonyme). Accurately dimensioned smooth-surfaced multi-layer cardboard tubes and method of and apparatus for making the same. 3,813,026, Cl. 229-4.500.

Bierwiler, Martha. Animated children's marionette theatre. 3,812,611, Cl. 46-13.000.

Bieser, Herbert J., to Universal Oil Products Company. Process for separating para-xylene. 3,813,452, Cl. 260-674.0sa.

Bingham, Alex John: *See—*
Wright, William Howell; Bingham, Alex John; and Fox, William Albert, 3,813,366.

Binsfeld, George H., to Construction Forms, Inc. Concrete form vibrator clamp unit. 3,813,068, Cl. 248-14.000.

Bird Corporation: *See—*
Bird, Forrest M.; and Pohndorf, Henry L., 3,812,878.

Bird, Forrest M.; and Pohndorf, Henry L., to Bird Corporation. Fail-safe breathing circuit and valve assembly for use therewith. 3,812,878, Cl. 137-512.000.

Bird Island, Inc.: *See—*
Wildhaber, Ernest, 3,812,759.
Wildhaber, Ernest, 3,812,760.

Bissell, Henry M.: *See—*
Cruse, William Marion, 3,812,631.

Bissonet, Claude. Writing pad holder with identification and print means. 3,812,781, Cl. 101-298.000.

Bivens, David J., to Bivens Winchester Corporation. Vehicle washing apparatus. 3,812,550, Cl. 15-21.00e.

Bivens Winchester Corporation: *See—*
Bivens, David J., 3,812,550.

Bizon, Emil: *See—*
Barnes, John Grober; Bizon, Emil; Murray, Charles Robertson; Rowley, Edward Kenneth; and Waugh, Clayton Thomas, 3,812,769.

Blackmon, William G., to Steamatic, Inc. Cleaning apparatus for carpets and the like. 3,812,552, Cl. 15-321.000.

Blackstone Corporation: *See—*
Antonevich, John N., 3,813,616.

Blancheville, Pierre J.; Brun, Guy; and Dat, Pham Tat, to Office de Radiodiffusion-Television Francaise. Frequency to amplitude modulated wave converter. 3,813,617, Cl. 332-31.00r.

Blanding, Curtis J., to Singer Company, The. High-speed function generator. 3,813,528, Cl. 235-152.000.

Blankenship, Milton O. Poultry handling system. 3,812,822, Cl. 119-17.000.

Block, Leo; Ashton, Larry J.; and Vodraska, Kenneth F., to Raypak, Inc. System to prevent freezing of heating units such as boilers. 3,812,872, Cl. 137-62.000.

Bloeck, Siegfried: *See—*
Hofling, Erich; Baur, Rudolf; and Bloeck, Siegfried, 3,813,303.

Blonder, Isaac S., to Blonder-Tongue Laboratories, Inc. Method of and apparatus for scramble-encoded transmission and decoded reception for over the air and cable subscription television and the like. 3,813,482, Cl. 178-5.100.

Blonder-Tongue Laboratories, Inc.: *See—*
Blonder, Isaac S., 3,813,482.

Blum, Alex, to Sprecher & Schuh AG. Alternating-current protective device. 3,813,621, Cl. 335-99.000.

Boassy, Emil J.: *See—*
Shanni, Vincent; and Boassy, Emil J., 3,812,633.

Bock, Eugen; Dollhausen, Manfred; and Muller-Albrecht, Horst, to Bayer Aktiengesellschaft. Contact adhesive mixtures. 3,813,380, Cl. 260-77.5ap.

Boegli, Serge: *See—*
Burrus, Charles; and Boegli, Serge, 3,812,768.

Boehm, Walter G.; and Torrance, Gordon A., to Webb, Jervis B., Company. Cooling system for rod or bar coils. 3,813,087, Cl. 266-2.00a.

Boehringer, Raymond H.; Wilson, Ronald M.; and Margeson, Mark A., to Emery Industries, Inc. Acid-terminated hydroxy ester compounds as lubricating oil additives. 3,813,339, Cl. 252-56.00s.

Bogatov, Nikolai Alexandrovich: *See—*
Rogalsky, Anatoly Viktorovich; Markevich, Vitaly Mikhailovich; Kheifets, Georgy Naumovich; Zaichenko, Jury Leonidovich;

Baburov, Valery Efremovich; Pavlovsky, Vladimir Petrovich; Golban, Eduard Vasilievich; Pechennik, Leonid Naumovich; Knyazhinsky, Zakhar sipovich; Bogatov, Nikolai Alexandrovich; Raichuk, Jury Isaakovich; Zaritsky, Vaktor Nikolaevich; and Grodzitsky, Evgeny Fedorovich, 3,812,909.

Bohannan, Lawson E. Candy container removably connected to a child's cap. 3,813,016, Cl. 224-5.00r.

Boice, William Knight, to General Electric Company. Stabilizing means for an A-C motor drive. 3,813,589, Cl. 318-227.000.

Boillot, Pierre, to Institut de Recherches de la Siderurgie Francaise (IRSID). Device for degassing a sample. 3,812,705, Cl. 73-19.000.

Bollig, Georg; Grothe, Horst; Knell, Bernhard; Thalmann, Armin; and Zeller, Josef, to Schloemann Aktiengesellschaft and Concast AG. Method of operating a multi-roll casting machine during and after freezing of the liquid core of the strand. 3,812,900, Cl. 64-76.000.

Bommart, Patrick Theodore, to Acieries de Gennevilliers Anciens and Etablissements C. Delachaux. Conductor rails for energising electrical machinery. 3,813,502, Cl. 191-30.000.

Bonarrigo, Joseph F.: *See*—
Butler, Richard A., Jr.; and Bonarrigo, Joseph F., 3,813,053.

Boonstra, Alexander Hendrik; and Schampers, Paulus Phillippus Maria, to U.S. Philips Corporation. Method of doping the surface of a metal-oxygen compound. 3,813,292, Cl. 117-215.000.

Boothe, Jerry Emile; Sharpe, Andrew Jackson, Jr.; and Seese, Kathleen Ann, to Calgon-Corporation. Electroconductive paper. 3,813,264, Cl. 117-201.000.

Borelli, Ronald F., to Honeywell Information Systems, Inc. Electrographic forms print station. 3,812,780, Cl. 101-216.000.

Borg-Warner Corporation: *See*—
Wiese, Winfred J., 3,813,103.

Borrel, Philippe: *See*—
Masotti, Robert; Rieux, Jean-Philippe; Borrel, Philippe; and Lehureau, Jean, 3,813,282.

Bosch, Robert, GmbH: *See*—
Bauman, Gunther; Schmidt, Peter; Eisele, Hermann; and Wahl, Josef, 3,812,710.
Espenschied, Helmut; and Weyer, Herbert, 3,812,942.

Bossler, Robert B., Jr., to Kaman Aerospace Corporation. Bolt head which measures and maintains preload. 3,812,758, Cl. 85-62.000.

Bouiller, Jean Georges; Gobin, Michel Roland; Lacroix, Armand Jean-Baptiste; and Bauger, Louis Jules; deceased (by Bauger, Madeleine Henriette Aimee, and Olivier, Jeanne Denise; administrators), to Societe Nationale d:Etude et de Construction de Moteurs d'viation. Support structure for rotor blades of turbomachines. 3,813,185, Cl. 416-198.000.

Bowler, Colin E. J.: *See*—
Tice, James B.; and Bowler, Colin E. J., 3,813,593.

Bowles, Harry L., Jr., to Austral Incinerator Corporation. Incinerator. 3,812,795, Cl. 110-8.00c.

Boyd, James W.: *See*—
Misdom, Theodore H., Jr.; and Boyd, James W., 3,813,027.

Boyle, John Terence Arnoit; and Saunders, John Christopher, to Wyeth, John, & Brother Limited. Derivatives of 3- amino-1,2,4-triazoles. 3,813,400, Cl. 260-295.0am.

Bozer, Keith B.; and Brown, Lloyd H., to Quaker Oats Company, The. Method for curing a furfuryl alcohol binder. 3,813,371, Cl. 260-88.500.

Brach, Walter H., 20% to Lee, Raymond, Organization, The. Device for holding chuck key and for drilling straight and perpendicular holes. 3,813,182, Cl. 408-72.000.

Bradbury, James J. Screw-driver. 3,812,894, Cl. 154-50.00r.

Bradley, Allen, Company: *See*—
Struger, Odo J.; Grants, Valdis; and Searcy, William W., 3,813,649.

Brakebill, Harold G.: *See*—
Lewis, Jay L.; Puster, Louis M.; and Brakebill, Harold G., 3,813,034.

Branson, Charles D.; and Genbauffe, Francis S., to Robertshaw Controls Company. Oven control system and parts therefor or the like. 3,813,078, Cl. 251-28.000.

Branson Instruments Incorporated: *See*—
Holze, Ernest P., Jr.; and Culp, Donald R., 3,813,006.
Kramer, George C., 3,813,021.

Braun Aktiengesellschaft: *See*—
Roth, Johann, 3,813,153.

Bray, Donald T., to Desalination Systems, Inc. Porous backing material for semipermeable membrane cartridges. 3,813,334, Cl. 210-321.000.

Brebik, Stephen J.; and Anthony, Roger B., to Essex International, Inc. Retainers for electrical components. 3,813,637, Cl. 339-59.00r.

Breglia, John Eugene. Personal protective device. 3,812,583, Cl. 30-164.900.

Breitfuss, Thomas K. Intergrally combined preformed core and cast-in-place outer component section for pipeline assemblies. 3,812,884, Cl. 138-105.000.

Brennan, Francis P. Packing brace for washing machines. 3,812,959, Cl. 206-320.00m.

Breslow, Jeffrey D.: *See*—
Glass, Marvin I.; Breslow, Jeffrey D.; and Jaworski, Eugene, 3,812,613.

Breuer, Wolfgang, to Maschinenfabrik Reinhausen Gebruder Scheubeck K.G. Transfer switch for tap-changing regulating transformers. 3,813,503, Cl. 200-11.0tc.

Bridgestone Tire Company Limited: *See*—
Aramaki, Kuninori; Kawakami, Hiroshi; and Kawaguchi, Yasuharu, 3,812,968.

Bristol-Myers Company: *See*—
Naito, Takayuki; and Okumura, Jun, 3,813,376.
Naito, Takayuki; and Okumura, Jun, 3,813,390.
Naito, Takayuki; Okumura, Jun; and Kamachi, Hajime, 3,813,391.

British & Foreign Tobacco Company Limited: *See*—
Solomon, Arieh, 3,813,025.

Broadbent, Arnold; and Frost, Peter, to Talentum Developments Limited. Fire detection apparatus. 3,813,551, Cl. 250-338.000.

Brochard, Claude; and Cossart, Rene, to Creusot-Loire. Driving system of the spindle of a milling lathe. 3,812,764, Cl. 90-11.00r.

Brock, George W.; and Shelledy, Frank B., to International Business Machines Corporation. Internally biased magnetoresistive magnetic transducer. 3,813,692, Cl. 360-113.000.

Brock, Norbert: *See*—
Vogelsang, Dietrich; Scheffler, Gerhard; Brock, Norbert; and Lenke, Dieter, 3,813,384.

Brody, Ernest O., to Lancaster Colony Corporation. Flower basket with water receptacle and detachable handle. 3,812,617, Cl. 47-41.000.

Brooker, Leslie G. S.; Fumia, Arthur, Jr.; and Heseltine, Donald W., to Eastman Kodak Company. Certain hemioxonal dyes. 3,813,397, Cl. 260-268.00c.

Brosens, Pierre J.: *See*—
Miskolczy, Gabor; Shefsiek, Paul K.; and Brosens, Pierre J., 3,813,210.

Brouneus, Harold A., to Corning Glass Works. Electric heating unit. 3,813,520, Cl. 219-543.000.

Brouwers, Karel J.; and Heinle, Preston J., to Motorola, Inc. Thermally stabilized thermosetting plastic material and article. 3,813,379, Cl. 260-28.000.

Brown, Absalom; deceased (by Brown, Mary Eleanore; administratrix), 85% to Creek, Ellis A. and 10% to Brown, Frank E. Admission control system and means. 3,812,674, Cl. 60-327.000.

Brown, Frank E.: *See*—
Brown, Absalom, 3,812,674.

Brown, Grant M., to Kysor Industrial Corporation. Refrigerated display case. 3,812,684, Cl. 62-89.000.

Brown, Kenard D. Method and apparatus for removing products of combustion from a stream of gaseous fluid. 3,812,654, Cl. 55-92.000.

Brown, Lloyd H.: *See*—
Bozer, Keith B.; and Brown, Lloyd H., 3,813,371.

Brown, Mary Eleanore: *See*—
Brown, Absalom, 3,812,674.

Brown, Omar L., to Fraze, Ermal C., mesne. Metal forming. 3,812,803, Cl. 113-121.00c.

Brown, Ted R. Air conditioning process. 3,812,685, Cl. 62-93.000.

Browning, Gordon D.: *See*—
Day, Alan M.; and Browning, Gordon D., 3,812,774.

Brownstein, Ronald G.: *See*—
Burgess, Lester E.; and Brownstein, Ronald G., 3,813,281.

BRS, Inc.: *See*—
Keastle, Berthold, 3,812,605.

Bruck, Herbert: *See*—
Schranz, Karl-Wilhelm; Hunicke, Wolfgang; Brus, Gerhard H.; Schon, Erwin; Busch, Josef; and Bruck, Herbert, 3,813,246.

Bruckner Apparatebau GmbH: *See*—
Bruckner, Kurt, 3,812,599.

Bruckner, Kurt, to Bruckner Apparatebau GmbH. Apparatus for the treatment of textile fabric. 3,812,599, Cl. 34-216.000.

Brun, Guy: *See*—
Blancheville, Pierre J.; Brun, Guy; and Dat, Pham Tat, 3,813,617.

Brus, Gerhard H.: *See*—
Schranz, Karl-Wilhelm; Hunicke, Wolfgang; Brus, Gerhard H.; Schon, Erwin; Busch, Josef; and Bruck, Herbert, 3,813,246.

Brushwyler, Gordon R.: *See*—
Merrell, Kenneth C.; Scott, Timothy F.; Brushwyler, Gordon R.; Koegel, James H.; and Poindexter, William E., 3,813,325.

Brynda, Vaclav: *See*—
Marsalek, Milan; Junek, Jan; Brynda, Vaclav; Burysek, Frantisek; Hortlik, Frantisek; Ripka, Josef; and Lanta, Jiri, 3,812,667.

Buckingham, Eliot K.: *See*—
Campbell, Gary; and Buckingham, Eliot K., 3,812,737.

Buckles, Richard G.: *See*—
Michaels, Alan S.; Buckles, Richard G.; and Keller, Michael P., 3,812,854.

Buhler, Andreas, to Castle Brass Works (Proprietary) Limited. Valve for proportioning fluid flow. 3,812,875, Cl. 137-454.600.

Buhrer, Carl F., to GTE Laboratories Incorporated. Electro-optic variable phase diffraction grating and modulator. 3,813,142, Cl. 350-96.0wg.

Buhrer, Carl F., to GTE Laboratories Incorporated. RF magneto-resistive magnetic domain detector. 3,813,660, Cl. 340-174.0eb.

Bull, Brian S.: *See*—
Proni, Oscar; and Bull, Brian S., 3,812,707.

Bunnell, Arthur K., to Carling O'Keefe Limited. Bottle carrying case. 3,812,996, Cl. 220-21.000.

Burch, Darrell E.; Gates, Francis J.; Gryvnak, David A.; and Pembrook, John D., to Philco-Ford Corporation. Light beam alternator having a single rotating mirror. 3,813,146, Cl. 350-285.000.

Burdick Corporation, The: *See*—
Partridge, Leslie W., 3,812,845.

Burford, John Reginald: *See—*
Murphy, Brian Egmont; Burford, John Reginald; and Wassilieff, Alexander, 3,812,859.

Burgess, Lester E.; and Brownstein, Ronald G., to Gulf & Western Industrial Products Company. Composite flexible armor. 3,813,281, Cl. 161-159.000.

Burmah Oil Trading Limited: *See—*
Elliott, John Scotchford; Jayne, Gerald John Joseph; Crook, Monty Frederick; and Harrington, Colin John, 3,813,341.

Burndy Corporation: *See—*
Wigby, Jon; and St. Jacques, Leonard, 3,813,634.

Burnett, Jimmy D., to United States of America, Army. Propellant composition containing polymers of vinyl ferrocene. 3,813,307, Cl. 149-19.910.

Burnham, Horace James, to Defence, The Secretary of State for. Retraction mechanism for a protruding part of a vehicle. 3,813,113, Cl. 280-150.00r.

Burr, John W.; Fricke, Hans D.; and Sobieniak, Mathew G., to Textron, Inc. Rocket fuel supply system. 3,812,671, Cl. 60-39.470.

Burrus, Charles; and Boegli, Serge, to Burrus, F. J., & Cie. Method and device for producing a cigarette filter unit. 3,812,768, Cl. 93-1.00c.

Burrus, F. J., & Cie: *See—*
Burrus, Charles; and Boegli, Serge, 3,812,768.

Burysek, Frantisek: *See—*
Marsalek, Milan; Junek, Jan; Brynda, Vaclav; Burysek, Frantisek; Hortlik, Frantisek; Ripka, Josef; and Lanta, Jiri, 3,812,667.

Busch, Josef: *See—*
Schranz, Karl-Wilhelm; Hunicke, Wolfgang; Brus, Gerhard H.; Schon, Erwin; Busch, Josef; and Bruck, Herbert, 3,813,246.

Bustard, John Shaw: *See—*
Jones, Alan; and Bustard, John Shaw, 3,812,952.

Butler Automatic, Inc.: *See—*
Butler, Richard A., Jr.; and Bonarrigo, Joseph F., 3,813,053.

Butler, Richard A., Jr.; and Bonarrigo, Joseph F., to Butler Automatic, Inc. Web winding machines. 3,813,053, Cl. 242-58.400.

Buzby, Wayne R.: *See—*
King, Richard L.; and Buzby, Wayne R., 3,813,531.

Cabax Mills: *See—*
Woodruff, Curtis H., 3,812,964.

Cadiou, Jean, to Societe Anonyme Automobiles Citroen. Seats having head-rests. 3,813,151, Cl. 297-396.000.

Cahn, Robert L. Conveyor apparatus. 3,812,786, Cl. 104-88.000.

Caldwell, Robert J.: *See—*
Katz, Alex J.; and Caldwell, Robert J., 3,813,150.

Calgon-Corporation: *See—*
Boothe, Jerry Emile; Sharpe, Andrew Jackson, Jr.; and Seese, Kathleen Ann, 3,813,264.

Cam-Stat Incorporated: *See—*
Hewitt, William Lloyd, 3,813,581.

Campbell, Gary; and Buckingham, Eliot K., to Lockwood Corporation. Worm gear construction. 3,812,737, Cl. 74-425.000.

Campbell, Kenneth J., to United States of America, Navy. Bandwidth measurement system. 3,813,599, Cl. 325-67.000.

Campbell, Peter. Workholder. 3,812,629, Cl. 51-216.00r.

Canadian Industries Limited: *See—*
Barnes, John Grober; Bizon, Emil; Murray, Charles Robertson; Rowley, Edward Kenneth; and Waugh, Clayton Thomas, 3,812,769.

Canadian Marconi Company: *See—*
Denoncourt, Gilles J., 3,813,604.

Canadian Patents and Development Limited: *See—*
Benoiton, Norman L.; Tong, Jeffrey H. Y.; D'Ilorio, Antoine; and Petitclerc, Jean C., 3,813,317.

Canfield, Robert C.; Neta, Thomas E.; and Wiesenborn, Robert F., to Monsanto Company. Process for alkylation of aromatic compounds. 3,813,451, Cl. 260-671.00p.

Canon Kabushiki Kaisha: *See—*
Hasegawa, Goro; Nakamoto, Soichi; and Hosoe, Kazuya, 3,813,679.
Kitajima, Nobuo; Masaki, Tatsuo; and Kondo, Hideyo, 3,813,243.

Canty, John M. Light piping unit for pressure vessel. 3,813,514, Cl. 219-354.000.

Caparone, Michael J., to Robertshaw Controls Company. Heating control system. 3,813,033, Cl. 236-9.00r.

Capper, Keith C., to Aquarian-Age-Inventor, Inc. Combination book holder and book stand. 3,813,075, Cl. 248-461.000.

Caprari, Fausto, to RCA Corporation. Series regulated power supply for arc discharge lamps utilizing incandescent lamps. 3,813,576, Cl. 315-205.000.

Carborundum Company, The: *See—*
Juhasz, Charles, 3,812,816.

Cargo, Charles H.: *See—*
Lauck, Robert B.; Meyer, Lawrence L.; and Cargo, Charles H., 3,812,925.

Carissimi, Vincent L., to Hubbell, Harvey, Incorporated. Weatherproof enclosure for electrical devices. 3,813,640, Cl. 339-156.00r.

Carling O'Keefe Limited: *See—*
Bunnell, Arthur K., 3,812,996.

Carlsen, W. John, to General Telephone & Electronics Laboratories. Image-plane carrier hologram recording system using spherical wavefronts. 3,813,139, Cl. 350-3.500.

Carlson, Carl J., Jr.: *See—*
Merrick, Jim I.; Carlson, Carl J., Jr.; and Carlson, Donald W., 3,812,961.

Carlson, Donald W.: *See—*
Merrick, Jim I.; Carlson, Carl J., Jr.; and Carlson, Donald W., 3,812,961.

Carnelius Company, The: *See—*
Hassell, David A.; and McMillin, John R., 3,813,010.

Carr, Norman L.; Massoth, Franklin E.; Stahlfeld, Donald L.; and Young, John E., Jr., to Gulf Research & Development Company. Process for regenerating metal oxides used in the removal of arsenic from gaseous streams. 3,812,652, Cl. 55-68.000.

Carr, Peter, to Occidental Energy Development Company, mesne. Process of charging and discharging a metal halogen cell. 3,813,301, Cl. 136-86.00a.

Carter, John L.: *See—*
Weiner, Maurice; Carter, John L.; and Schneider, Sol, 3,813,608.

Carton for plurality of containers: *See—*
Samsing, Rolf, A., 3,812,958.

Cartwright, Howard. Recovery cable connector for diver-swimmer. 3,813,177, Cl. 403-27.000.

Cartwright, William Francis, to Celanese Corporation. Tabacco replacement material. 3,812,864, Cl. 131-2.000.

Caspar, Jakob: *See—*
Arbenz, Heinz; and Caspar, Jakob, 3,812,902.

Castle Brass Works (Proprietary) Limited: *See—*
Buhler, Andreas, 3,812,875.

Cavett, John Dill; and Hopkins, Robert Sherman, Jr., to RCA Corporation. Video stripper. 3,813,488, Cl. 178-7.100.

CCI Aerospace Corporation: *See—*
Escher, William J. D., 3,812,672.

Celanese Corporation: *See—*
Cartwright, William Francis, 3,812,864.
Di Edwardo, Andrew H.; and Gump, Klaus H., 3,813,219.
Jamison, Saunders Eliot, 3,812,615.
Juelke, Charles V.; and Trapasso, Louis E., 3,813,454.

Cense, Adriaan; and Van Straaten, Jan, to U.S. Philips Corporation. Integrated threshold circuit for stages with different control ranges. 3,813,603, Cl. 325-319.000.

Central City Micro Foundry Ltd.: *See—*
Droege, Lee John; Reardon, Michael J.; and Wilhite, Alan Roy, 3,813,310.

Ceraver: *See—*
Moussou, Jean, 3,813,217.

Cetola, Henry A.; and Crosby, Timothy J., to Robertshaw Controls Company. Fuse retainer and extractor. 3,813,626, Cl. 337-245.000.

CFS Corporation: *See—*
Straughan, Clemens F., 3,813,272.

Chaille, James L.: *See—*
Baldwin, Mart G.; and Chaille, James L., 3,813,305.

Chakrabarty, Ananda M., to General Electric Company. Microorganisms having multiple compatible degradative energy-generating plasmids and preparation thereof. 3,813,316, Cl. 195-28.00r.

Champeau, William J.: *See—*
Ray, Robert L.; Champeau, William J.; and Mc Atee, Kerry D., 3,813,197.

Champion, Inc.: *See—*
Shanni, Vincent; and Boassy, Emil J., 3,812,633.

Chang, Ifay F.; and Dreyfus, Russell W., to International Business Machines Corporation. Addressable photochromic memory display device. 3,813,554, Cl. 250-461.000.

Chaplin, John B., to Textron Inc. Air cushion vehicle control device. 3,812,930, Cl. 180-117.000.

Chapman, James Ronald: *See—*
Benson, Robert W.; and Chapman, James Ronald, 3,812,709.

Charlton, Walter F.: *See—*
Rich, Edward, Jr., 3,813,658.

Charlton, Walter T., 1/2 to Rich, Edward, Jr. Movable-object identification system. 3,813,659, Cl. 340-146.30k.

Charrin, Paul J.: *See—*
Sears, Edward G., 3,813,170.

Chaudhari, Praveen, to International Business Machines Corporation. Creep resistant superplastic alloys. 3,813,241, Cl. 75-178.00a.

Checheljuk, Yakov Zinovievich: *See—*
Pshenichny, Gennady Ivanovich; Checheljuk, Yakov Zinovievich; and Gryazev, Ivan Ivanovich, 3,812,567.

Chemed Corporation, mesne: *See—*
Fleck, Elmer E., 3,813,223.

Chemische Werke Huls Aktiengesellschaft: *See—*
Witte, Helmut; and Seeliger, Wolfgang, 3,813,378.

Chevalier, Gabriel; and Gatel, Gilbert, to Societe Generale de Constructions Electriques et Mecaniques. High security digital conversion and transmission scheme for a closed loop control system. 3,813,530, Cl. 235-153.00a.

Chevron Research Company: *See—*
Goldschmidt, Alfred, 3,813,336.

Chicago Bridge & Iron Company: *See—*
Laverman, Royce Jay, 3,812,683.

Chigir, Leonid Nikolaevich: *See—*
Neshumaev, Anatoly Dmitrievich; Goncharov, Boris Konstantinovich; Smolyar, Anatoly Alexeevich; and Chigir, Leonid Nikolaevich, 3,812,763.

Chiolle, Antonio; Credali, Lino; Longi, Paolo; Greco, Francesco; and D'Angelo, Romano, to Montecatini Edison S.p.A. Copolymers of alkenylsulfonates and cation permoselective membranes based thereon. 3,813,354, Cl. 260-2.20r.

Chmela, Frank P.: *See—*
Kufner, Kenneth L.; Pellegrino, Thomas P.; and Chmela, Frank P., 3,812,569.

Chmielewska, Danuta: *See—*
Kycia, Henryk; Chmielewska, Danuta; Rolak, Hanna; Michno, Zbigniew; Zaniuk, Jan; Surgiewicz, Janusz; Stefaniak, Ferdynand; Lenkowski, Przemyslaw; and Kobosko, Anna, 3,813,415.
Chore-Time Equipment, Inc.: *See—*
Kaiser, Steven A., 3,812,772.
Chow, Silver H.: *See—*
Huber, Wolfgang; Chow, Silver H.; and Saifer, Mark G., 3,813,289.
Chubu Kikai Co., Ltd.: *See—*
Kamikawa, Kousaku; and Kawabe, Seikichi, 3,812,644.
Chwab, William H.: *See—*
Kivlen, John A.; Orr, Richard L.; Chwab, William H.; and Macindoe, George F., 3,812,663.
Ciba-Geigy AG: *See—*
Benisek, Ladislav; Winterbottom, Kenneth; Shaw, Trevor; and Edmondson, Gerald Keith, 3,813,220.
Duerr, Dieter; and Nikles, Erwin, 3,813,436.
Duerr, Dieter; Hitz, Hans Rudolf; Duennenberger, Max; and Schellenbaum, Max, 3,813,437.
Emden, Helmut Huber; Hubele, Adolf; and Klahre, Guenter, 3,813,399.
Hubele, Adolf, 3,813,429.
Ciba-Geigy Corporation: *See—*
Habermeier, Jurgen; Porret, Daniel; and Baumann, Dieter, 3,813,352.
Rutz, Hans; and Gubler, Kurt, 3,813,235.
Cincinnati Milacron Inc.: *See—*
Kelly, Ralph; and Ritter, Edmond Jean, 3,813,350.
Citation Manufacturing Company, Inc.: *See—*
Farque, Claud Anthony, 3,812,929.
Citizen Watch Company Limited: *See—*
Nikaido, Akira; Nakajima, Fumio; Onda, Mitsuo; Machida, Takayasu; and Toida, Takashi, 3,812,670.
Cladingboel, James David. Transport of woodchips. 3,812,984, Cl. 214-15.00b.
Clancy, David, to Colgate-Palmolive Company. Automatic packaging machines. 3,812,649, Cl. 53-187.000.
Clark, Alex L., Limited: *See—*
Ramsdale, Roy, 3,813,684.
Clark and Smith Industries, Limited: *See—*
Marfy, Zoltan Josef, 3,813,689.
Clarke, Robert L.; and Daum, Sol J., to Sterling Drug Inc. Tropane-2-carboxylates and derivatives. 3,813,404, Cl. 260-292.000.
Clausen, Edward M.; and Clemmer, Robert G., to General Electric Company. Ultrasonically etched photoflash lamp. 3,813,205, Cl. 431-94.000.
Clauss, Richard J., to Oxy Metal Finishing Corporation. Composite nickel iron electroplate and method of making said electroplate. 3,812,566, Cl. 29-183.500.
Clemens, David H.; and Lange, Raymond J., to Rohm & Haas Company. Preparation of ion exchange resins from acrolein copolymers. 3,813,353, Cl. 260-2.10c.
Clement, Ralph C., to I-T-E Imperial Corporation. Power tap for continuous outlet duct. 3,813,633, Cl. 339-14.00r.
Clemmer, Robert G.: *See—*
Clausen, Edward M.; and Clemmer, Robert G., 3,813,205.
Clifton, David A.; and Fielder, Frederick D., to Sonicaid Limited. Diagnostic apparatus for fetal heartbeat monitoring. 3,813,654, Cl. 340-3.00d.
Coatings Engineering Corporation: *See—*
Knott, James M., 3,812,640.
Cobb, Clyde C., to American Screen Process Equipment Company. Automatic multi-color printing arrangement. 3,812,779, Cl. 101-115.000.
Coberley, Daniel A., to Hurletron Incorporated. Industrial machine controller. 3,813,524, Cl. 235-92.00t.
Coca-Cola Company, The: *See—*
Wurl, Wilhelm, 3,812,991.
Cochrane, Robin Adam, to Girling Limited. Hydraulic flow control valve assemblies. 3,812,675, Cl. 60-413.000.
Cohen, Joseph; and Scotoni, Ralph, Jr., to Aerojet-General Corporation. Propellant formed cure-shrinkable propellant material. 3,812,785, Cl. 102-100.000.
Cohen, Leonard D., to GTE Laboratories Incorporated. Modulated microwave source. 3,813,600, Cl. 325-126.000.
Cohen, Noal; Rosenberger, Michael; and Saucy, Gabriel, to Hoffmann-La Roche Inc. Cycloalkyl [f] [1] benzopyrans. 3,813,417, Cl. 260-345.200.
Colgate-Palmolive Company: *See—*
Clancy, David, 3,812,649.
Hunter, Robert Tweedy, Jr.; and Marder, Herman Lowell, 3,813,359.
Colln, Reimer, to Bayer Aktiengesellschaft. Preparation of N-unsubstituted (thiono)-(thiol)-phosphoric (phosphonic) acid O-ester mono-amides. 3,813,457, Cl. 260-971.000.
Colombo, Arturo, to Sitam Societa' Industriale Telai Automatici Milano S.r.l. Fastener. 3,812,556, Cl. 24-230.0ak.
Colortex S.A.: *See—*
Risse, Jean, 3,813,083.
Colt Industries Operating Corporation: *See—*
Michaud, Orean E., 3,812,591.
Columbia Broadcasting System, Inc.: *See—*
Auber, Benjamin B., 3,813,494.
Foss, Norman A.; and Ward, Samuel A., 3,813,541.
Combs, Clyde, Jr.: *See—*
Davidsohn, Uryon S.; Short, John P.; Combs, Clyde, Jr.; and Guerra, Edward E., 3,813,584.
Combustion Equipment Associates, Inc.: *See—*
Vandenhoeck, J. Paul, 3,812,660.
Cominassi, Adolphe: *See—*
Lievremont, Henri; and Cominassi, Adolphe, 3,813,356.
Communications Satellite Corporation: *See—*
Maillet, Wilfrid G., 3,813,496.
Wachs, Marvin Richard; and Berman, Arnold, 3,813,497.
Compagnie de Saint-Gobain: *See—*
Jochim, Friedrich; Peetz, Dieter; Karla, Heinz; and Luerssen, Hermann, 3,813,519.
Compton, Jerry L.; and Seitz, David R., to Globe Tool and Engineering Company, The. Armature winding method and apparatus. 3,812,577, Cl. 29-597.000.
Compupop, Inc.: *See—*
Day, Alan M.; and Browning, Gordon D., 3,812,774.
Concast AG: *See—*
Bollig, Georg; Grothe, Horst; Knell, Bernhard; Thalmann, Armin; and Zeller, Josef, 3,812,900.
Condux-Werk, Herbert A. Merges KG: *See—*
Lehr, Heinz, 3,813,048.
Cone, George W.; and Kinzie, James E., to Garrett Comtronics Corporation. Clock calculator. 3,813,533, Cl. 235-156.000.
Conerly, Howard Jeffery, to International Telephone and Telegraph Corporation. Memory control for toll systems. 3,813,495, Cl. 179-7.0mm.
Conger, Marvin T., to Goodyear Tire & Rubber Company, The. Method of molding embossed foamed polymethane laminates. 3,813,463, Cl. 264-45.000.
Conner, Michael E., to United States of American, Army. Matched pair of enhancement mode MOS transistors. 3,813,586, Cl. 317-234.00r.
Connors, John D.: *See—*
Moore, William C.; and Connors, John D., 3,812,847.
Conrad, Rene. Scalloped belt engaging tangent for ribbing on centering and idler tracking rollers. 3,812,732, Cl. 74-240.000.
Consolidated Edison Company of New York, Inc.: *See—*
Fischer, Frank E., 3,813,477.
Construction Forms, Inc.: *See—*
Binsfeld, George H., 3,813,068.
Continental Can Company, Inc.: *See—*
Hougen, Gary A.; and Kloc, Henry F., 3,813,001.
Cook, Richard S., to PPG Industries, Inc. Fluidized solids reactor with refractory lining. 3,813,225, Cl. 23-284.000.
Cooper, James Joseph, Jr.; and Schurter, Gary Lee, to International Telephone and Telegraph Corporation. Terminal connector. 3,813,635, Cl. 339-22.00b.
Cooperman, Isadore Nathan. Cleaning compositions. 3,813,342, Cl. 252-170.000.
Copeland Corporation: *See—*
King, Robert W., 3,813,195.
Coppock, Walter J.; Amaroso, James R.; and Griffith, John Q., III, to Sun Oil Company of Pennsylvania. Textile-machinery lubricant composition. 3,813,338, Cl. 252-42.100.
Cornelison, James J.: *See—*
Johnson, Edgar G., Jr.; and Cornelison, James J., 3,813,167.
Corning Glass Works: *See—*
Asher, John W.; and Herczog, Andrew, 3,812,688.
Brouneus, Harold A., 3,813,520.
Forker, Ray B., Jr.; and Panzarino, Joseph N., 3,813,232.
Reade, Richard F., 3,812,689.
Teter, Michael P., 3,813,173.
Cory, Robert P.: *See—*
Armbruster, Frederick C.; Heady, Robert E.; and Cory, Robert P., 3,813,318.
Coscia, Anthony Thomas; and Williams, Laurence Lyman, to American Cyanamid Company. Water-soluble polyamidepolyamines containing phenylene linkages and processes for the manufacture thereof. 3,813,362, Cl. 260-29.20n.
Cossart, Rene: *See—*
Brochard, Claude; and Cossart, Rene, 3,812,764.
Coulter Electronics, Inc.: *See—*
Proni, Oscar; and Bull, Brian S., 3,812,707.
Courtot, Louis B., to Weatherhead Company, The. Flexible cable assembly. 3,812,738, Cl. 74-501.00r.
Coville, Patrick; and Laurencier, Andre, to U.S. Philips Corporation. Heat transferring device. 3,812,908, Cl. 165-105.000.
Cowan, Gerald DeG.: *See—*
Cowan, John Vincent; Cowan, Gerald DeG.; and Cowan, John Gerald, 3,812,708.
Cowan, John Gerald: *See—*
Cowan, John Vincent; Cowan, Gerald DeG.; and Cowan, John Gerald, 3,812,708.
Cowan, John Vincent; Cowan, Gerald DeG.; and Cowan, John Gerald, to Scanning Systems, Inc. Method and apparatus for testing wheels and defect detection in wheels. 3,812,708, Cl. 73-67.50r.
Cowan, Larry Clyde: *See—*
Anderson, Ernest David; and Cowan, Larry Clyde, 3,812,881.
Cowham, Michael John; and Wadlow, David Edward, to Image Analysing Computers Limited. Detection devices for image analysis systems. 3,813,487, Cl. 178-7.100.
CPC International Inc.: *See—*

Armbruster, Frederick C.; Heady, Robert E.; and Cory, Robert P., 3,813,318.

Craftool Company, Inc., The: *See—*
Stars, William K., 3,812,887.

Crain, Philip W. Apparatus for applying medication or the like to human nasal passages. 3,812,853, Cl. 128-173.000.

Crandlemire, Roger C. Case inverter. 3,812,982, Cl. 214-1.0qa.

Crast, Leonard Bruce, Jr. 7-D-(δ-Amino-α-phenyl-,2-thiengl-and 3-thienyl-and 3-thienyl-acetamido) {-3-}S-(2-methyl-1,2,3-thiazole-4-yl)thiomethyl{-3-cephem-4-carloxylic acids. 3,813,388, Cl. 260-239.100.

Craveri, Renato; Manachini, Luigi; and Aragozzini, Fabrizio, to Societa Italiana Resine S.I.R. S.p.A. Process for the manufacture of proteases. 3,813,319, Cl. 195-65.000.

Crawford Fitting Company: *See—*
Zahuranec, Emery J.; Bedo, Alfred; and Barth, Ross E., 3,812,963.

Credali, Lino: *See—,*
Chiolle, Antonio; Credali, Lino; Longi, Paolo; Greco, Francesco; and D'Angelo, Romano, 3,813,354.

Creek, Ellis A.: *See—*
Brown, Absalom, 3,812,674.

Creusot-Loire: *See—*
Brochard, Claude; and Cossart, Rene, 3,812,764.

Crompton & Knowles Corporation: *See—*
Feeman, James F., 3,813,402.

Cronin, John C. Grounded gas insulated bus enclosure-combined enclosure joint backup ring and contamination control device. 3,813,475, Cl. 174-21.00c.

Crook, Monty Frederick: *See—*
Elliott, John Scotchford; Jayne, Gerald John Joseph; Crook, Monty Frederick; and Harrington, Colin John, 3,813,341.

Crosby, Timothy J.: *See—*
Cetola, Henry A.; and Crosby, Timothy J., 3,813,626.

Crown Cork & Seal Company, Inc.: *See—*
Kneusel, Raymond H. P.; and Potts, Vinson S., 3,812,696.

Crowne, Francis R.; Tan, Chiong-Heng; and Vandenbroek, Martin A., to Abrex Specialty Coatings Ltd. Tank for electro-coating continuous strip. 3,813,327, Cl. 204-300.000.

Cruse, William Marion, 1/3 to Bissell, Henry M. Stage platform control system. 3,812,631, Cl. 52-1.000.

Cryplex Industries, Inc.: *See—*
Feinberg, Robert S., 3,813,256.

C.S.S. Machine and Tool Company, Inc.: *See—*
Faure, Alphonse W., 3,812,690.

Culp, Donald R.: *See—*
Holze, Ernest P., Jr.; and Culp, Donald R., 3,813,006.

Cunningham, Ernest R., to Grip-Pak, Inc. Container package. 3,812,962, Cl. 206-427.000.

Curran, Bernard E.: *See—*
Albrecht, Raymond E.; Curran, Bernard E.; and Lindner, Robert G., 3,812,636.

Curtin, Daniel J., to Atlantic Richfield Company. Method for tar sands bitumen froth treatment. 3,813,030, Cl. 233-18.000.

Curtis, David M., to Xerox Corporation. Platen cover. 3,813,161, Cl. 355-75.000.

Curtiss-Wright Corporation: *See—*
Jones, Charles; and Raye, Alexander H., 3,812,574.

Curtz, William C.; and Matson, Merkham J. Rotational balancer. 3,812,724, Cl. 73-458.000.

Dabney, Douglas H. Saddle stirrup for use by a leg amputee. 3,812,650, Cl. 54-47.000.

Dahlstrom, Lars Erik. Method and device for the realization of a non-linear release of energy in high power lasers. 3,813,611, Cl. 331-94.50q.

Daido Seiko Kabushiki Kaisha: *See—*
Eguchi, Isamu; and Hiratake, Susumu, 3,813,469.

Daimler-Benz Aktiengesellschaft: *See—*
Stolz, Albert, 3,812,687.

Dainippon Screen Seizo Kabushiki-Kaisha: *See—*
Nishikawa, Yukio; Nagao, Yoshio; Miyauchi, Yoshio; Mori, Noriaki; and Matsui, Shigenori, 3,813,682.

Dairy Cap Corporation: *See—*
Feldman, Jerome M., 3,812,994.

Daiwa Can Company, Ltd.: *See—*
Yoshioka, Tsuyoshi; and Nishiyama, Sumio, 3,812,993.

Dalton, Charles Robert. Compressed liquid gas filling system. 3,812,888, Cl. 141-39.000.

Dalzell, James Welland. Thermostat. 3,813,630, Cl. 337-360.000.

Dane, Dan H., to United States of America, National Aeronautics and Space Administration. Sprag solenoid brake. 3,812,936, Cl. 188-171.000.

D'Angelo, Romano: *See—*
Chiolle, Antonio; Credali, Lino; Longi, Paolo; Greco, Francesco; and D'Angelo, Romano, 3,813,354.

Danielmeyer, Hans Guenter; and Weber, Heinz Paul, to Bell Telephone Laboratories, Incorporated. Laser employing a metallic pentaphosphate. 3,813,613, Cl. 331-94.500.

Danielsen, Bo Sixten, to AB Nora-Gomex. Product, preferably a rotatable working tool, E. G., a saw blade. 3,812,755, Cl. 83-835.000.

Danylchuk, Irynej; Geusic, Joseph Edward; and Nelson, Terence John, to Bell Telephone Laboratories, Incorporated. Single wall domain logic arrangement. 3,813,661, Cl. 340-174.0tf.

Darby, Lloyd Claude. Batsman box for a baseball diamond. 3,813,097, Cl. 273-25.000.

Darda, Helmut. Energy storing drive means. 3,812,933, Cl. 185-37.000.

Darrow, John O. G., to Westinghouse Air Brake Company. Fail-safe R-C phase shift oscillating type of level detector. 3,813,614, Cl. 331-108.00b.

Dat, Pham Tat: *See—*
Blancheville, Pierre J.; Brun, Guy; and Dat, Pham Tat, 3,813,617.

Daum, Sol J.: *See—*
Clarke, Robert L.; and Daum, Sol J., 3,813,404.

Davey, Frederick K.: *See—*
Hoffman, Philip A.; and Davey, Frederick K., 3,812,712.

Davidsohn, Uryon S.; deceased (by Ajamie, Amil J.; administrator); Short, John P.; Combs, Clyde, Jr.; and Guerra, Edward E. Solid state integrated circuits. 3,813,584, Cl. 317-235.00d.

Davis, Arthur. Simulated planetarium projector. 3,813,156, Cl. 353-119.000.

Davis, Calvin R.: *See—*
Von Tresckow, Hans-Udo; and Davis, Calvin R., 3,812,790.

Davis, Richard E. Removable ladder apron construction. 3,812,932, Cl. 182-126.000.

Dawidowitsch, Peter: *See—*
Geyken, Erwin; Dawidowitsch, Peter; and Ertl, Franz, 3,812,870.

Day, Alan M.; and Browning, Gordon D., to Compupop, Inc. Automatic popcorn popping machine. 3,812,774, Cl. 99-323.800.

Dayco Corporation: *See—*
Ray, Robert L.; Champeau, William J.; and Mc Atee, Kerry D., 3,813,197.

Dayton Progress Corporation: *See—*
Smith, Robert E., 3,812,895.

de Feudis, Sergio, to Aktiebolaget Svenska Flaktfabriken. Apparatus for the intermittent transferring of packaged refuse or laundry articles. 3,813,127, Cl. 302-27.000.

De Meester, Emiel Petrus Juliaan: *See—*
Jan Verstegen, Judicus Marinus Pieter; and De Meester, Emiel Petrus Juliaan, 3,813,569.

De Plasse, Noel, to Sublistatic Holding S.A. Temporary supports, their preparation and their use in dry dyeing and in dry printing by hot transfer. 3,813,218, Cl. 8-2.500.

De Quesada, Jorge: *See—*
Yang, Yue-Chyou; and De Quesada, Jorge, 3,812,637.

De Vries, Jan Lolke; and Liemburg, Alt, to U.S. Philips Corporation. Circuit arrangement for generating a variable magnetic field. 3,813,573, Cl. 315-13.00c.

De Zuba, George P.; Berger, Abe; and Selin, Terry G., to General Electric Company. Self-bonding, heat-curable silicone rubber. 3,813,364, Cl. 260-37.0sb.

Dean, Clarence T., III. Spell and learn educational toy. 3,813,471, Cl. 35-35.00h.

DeBoer, Jacob, to U.S. Philips Corporation. Noise reduction circuit. 3,813,559, Cl. 307-237.000.

Decoto Aircraft, Inc.: *See—*
Hallesy, Harold W.; and Revenig, Howard C., 3,813,065.

Deere & Company: *See—*
Nelson, Roger John, 3,813,188.

Defence, The Secretary of State for: *See—*
Burnham, Horace James, 3,813,113.

Deitch, Ronald S. Magnetic lock switch. 3,813,624, Cl. 335-206.000.

delle Porta, Paolo; Giorgi, Tiziano; Kindl, Bruno; and Zucchinelli, Mario, to S.A.E.S. Getters S.p.A. Process for producing a capacitor. 3,813,266, Cl. 117-212.000.

Delta Plastics Limited: *See—*
Murphy, Brian Egmont; Burford, John Reginald; and Wassilieff, Alexander, 3,812,859.

DeLuca, Carlo Bruno: *See—*
Schurter, Gary Lee; and DeLuca, Carlo Bruno, 3,813,639.

Denoncourt, Gilles J., to Canadian Marconi Company. Digital discriminator. 3,813,604, Cl. 329-122.000.

Derman, Karl Gustav Einar, to Forsheda Ideutveckling AB .ocking and sealing ring. 3,813,102, Cl. 277-9.000.

Desalination Systems, Inc.: *See—*
Bray, Donald T., 3,813,334.

Dessau, Ralph M.: *See—*
Heiba, El Ahmadi I.; and Dessau, Ralph M., 3,813,416.

Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Heimberger, Werner; and Weigert, Wolfgang, 3,813,410.

Di Edwardo, Andrew H.; and Gump, Klaus H., to Celanese Corporation. Process for the thermal stabilization of polyacrylonitrile fibers and films. 3,813,219, Cl. 8-115.500.

Diagnostic Data, Inc.: *See—*
Huber, Wolfgang; Chow, Silver H.; and Saifer, Mark G., 3,813,289.

Dialled Despatches Limited: *See—*
Smith, Robert William George; Barron, David Michael Arthur; and Wingrove, Arthur George, 3,813,058.

Diamond International Corporation: *See—*
Horvath, William, 3,812,989.

Dickson, Wayne D. Shoulder pack power unit for propelling water skis or surf boards. 3,812,813, Cl. 115-70.000.

Dieter, Jerry A.: *See—*
Frisch, Kurt C.; Reegen, Sidney; and Dieter, Jerry A., 3,813,365.

Dieulesaint, Eugene: *See—*
Hartemann, Pierre; and Dieulesaint, Eugene, 3,813,618.

Dillon, W. C., & Company, Inc.: *See—*

Schultheis, Harry Baldwin, 3,812,589.

Dinger, Edward H., to General Electric Company. DC motor speed control circuit. 3,813,591, Cl. 318-331.000.

Dionite Luggage Inc.: *See—*
Pelletier, Simon, 3,812,939.

D'Iorio, Antoine: *See—*
Benoiton, Norman L.; Tong, Jeffrey H. Y.; D'Iorio, Antoine; and Petitclerc, Jean C., 3,813,317.

DiStefano, Thomas H.; Laibowitz, Robert B.; and Rosenberg, Robert, to International Business Machines Corporation. Self-healing electrode for uniform negative corona. 3,813,549, Cl. 250-324.000.

Ditcher, John, to A-Lok Corporation. Gasket seal between sewer pipe and manhole opening. 3,813,107, Cl. 277-189.000.

Dobson, Gullick, Limited: *See—*
Allen, Archelaius Dawson, 3,812,681.

Doerfler, Roger E., to Kelsey-Hayes Company. Control valve. 3,812,678, Cl. 60-591.000.

Doherty, George O. P., to Lilly, Eli, and Company. Process for the preparation of 1-hydroxy-2-(1,1-difluoroalkyl) benzimidazoles and 1-hydroxy-2-(1,1-difluoroalkyl)1H-imidazo (4,5,-b) pyridines. 3,813,407, Cl. 260-296.00b.

Doherty, George O. P.; and Fuhr, Kenneth H., said Doherty, now by change of name O'Doherty, George O., P., assors. to Lilly, Eli, and Company. 1H-Imidazo(4,5,-b) pyridine compounds. 3,813,408, Cl. 260-296.00h.

Doin, Bernard; and Plantif, Bernard, to Societe Nationale des Poudres et Explosifs, mesne. Gas generator with coolant expulsion means. 3,813,007, Cl. 222-4.000.

Dolby, Dale P.; and Sandrock, Heinrich K., to Ampex Corporation. Magnetic tape duplicator. 3,813,688, Cl. 360-17.000.

Dollhausen, Manfred: *See—*
Bock, Eugen; Dollhausen, Manfred; and Muller-Albrecht, Horst, 3,813,380.

Donnelly, Brendan J.: *See—*
Shieh, Kenneth K.; Donnelly, Brendan J.; and Lee, Howard A., 3,813,320.

Doohan, Majorie T. Jewelry organizing cabinet. 3,813,138, Cl. 312-309.000.

Dori, Hisashi, to Yoshida Kogyo Kabushiki Kaisha. Slider holder. 3,812,571, Cl. 29-207.5sl.

Douglas, Ellwood S.: *See—*
Doyle, Richard C.; Wahlgren, Wallace W.; and Douglas, Ellwood S., 3,813,579.

Douglas, George H.; Faust, Warren R.; and Smith, Herchel, to American Home Products Corporation. 13-Polycarbon alkyl-3,11,17,20,21-pentaoxygenated-18-norpregnenes. 3,813,420, Cl. 260-397.450.

Dow Chemical Company, The: *See—*
Gurklis, Peter J., 3,813,002.
Hatch, Melvin J.; Yoshimine, Masao; Smith, Hugh B.; and Schmidt, Donald L., 3,813,413.
Heinemeyer, Ben W., 3,813,040.
Schmidt, Donald L.; Smith, Hugh B.; and Walles, Wielm E., 3,813,363.

Downey, Richard T.: *See—*
Auray, Didier Henri; Downey, Richard T.; and Macomber, Robert L., 3,813,023.

Doyle, Richard C.; Wahlgren, Wallace W.; and Douglas, Ellwood S., to Rucker Company, The. Electric receptacle assembly with ground fault protection. 3,813,579, Cl. 317-18.00d.

Dracon Industries: *See—*
Mason, John R., 3,813,636.

Drain, Albert Sterling, to Armour and Company. Method of packing fresh pork carcasses. 3,813,467, Cl. 426-393.000.

Draughon, Roland C.; Jensen, Paul D.; and Jensen, Donald E. Concrete plank mold for a molding machine. 3,813,076, Cl. 249-50.000.

Drewry, Hugh S., to Allis-Chalmers Corporation. Adapter for a vehicle having a built-in diagnostic system. 3,813,632, Cl. 339-10.000.

Dreyfus, Russell W.: *See—*
Chang, Ifay F.; and Dreyfus, Russell W., 3,813,554.

Drobich, Oleg Pavlovich; Pritomanov, Alexei Evgenievich; Rokutov, Viktor Petrovich; Kirvalidze, Nikolai Spiridonovich; Gerzmava, Dusheli Vladimirovich; and Mandzjuk, Boris Valentinovich. Lubricant composition for the hot pressing of metals and a method forthe preparation thereof. 3,813,335, Cl. 252-14.000.

Droege, Lee John; Reardon, Michael J.; and Wilhite, Alan Roy, to Central City Micro Foundry Ltd. Method for the manufacture of flat costume jewelry. 3,813,310, Cl. 156-3.000.

Drugmand, Lester D., to Emerson Electric Co. Method of making electric heating elements. 3,812,580, Cl. 29-611.000.

Du Pont, S. T.: *See—*
Kleine, Jean Jacques, 3,813,041.

Duca, William J., to Ajax Magnethermic Corporation. Horizontal coreless induction furnaces. 3,813,470, Cl. 13-29.000.

Duennenberger, Max: *See—*
Duerr, Dieter; Hitz, Hans Rudolf; Duennenberger, Max; and Schellenbaum, Max, 3,813,437.

Duerr, Dieter; and Nikles, Erwin, to Ciba-Geigy AG. Phenylurea derivatives and process for their manufacture. 3,813,436, Cl. 260-553.00a.

Duerr, Dieter; Hitz, Hans Rudolf; Duennenberger, Max; and Schellenbaum, Max, to Ciba-Geigy AG. N-2-Ethylhexyl-N'-aryl ureas. 3,813,437, Cl. 260-553.00a.

Duffield, Peter L.: *See—*
Steffy, Jack J.; and Duffield, Peter L., 3,813,675.

Duffty, Bryant: *See—*
Jasinski, Stanley C.; Wenstrup, Leo J.; and Duffty, Bryant, 3,812,892.

Dumas, Christ J. Enhanced low capacity socket. 3,813,570, Cl. 313-318.000.

Duncan, Robert Campbell; and Kokx, Darrel Dayfield, to Procter & Gamble Company, The. Hydro-dissociative agglomerate tampon. 3,812,856, Cl. 128-285.000.

Dunn, Elman R., to Litton Industries, Inc. Grinding apparatus with infeed control. 3,812,624, Cl. 51-115.000.

Dunn, Phillip D.: *See—*
Hamerdinger, Randolph W.; and Dunn, Phillip D., 3,812,905.

DuPont, S. T.: *See—*
Malamoud, Jean Gaston, 3,813,208.

Dyer, Clarence H.; Gaunt, Conrad L.; and Jarvis, Edward D., to General Motors Corporation. Method for insulating a preformed electical coil. 3,813,294, Cl. 117-218.000.

Dyna Logics, Inc.: *See—*
Lanahan, John H., 3,812,545.

East Bay Municipal Utility District: *See—*
LeVitt, Richard M., 3,813,597.

Eastman Kodak Company: *See—*
Brooker, Leslie G. S.; Fumia, Arthur, Jr.; and Heseltine, Donald W., 3,813,397.
Holland, Kenneth W., 3,812,665.
Hollister, Kenneth Robert; and Perry, Ernest John, 3,813,251.
Minsk, Louis Morton; and Staples, Jon Tewsbury, 3,813,247.
Villard, George, 3,813,244.

Eaton Corporation: *See—*
Hill, Donald C., 3,813,106.
Lauck, Robert B.; Meyer, Lawrence L.; and Cargo, Charles H., 3,812,925.
Meyer, Lawrence L., 3,812,557.
Patel, Kiritkumar R., 3,812,944.
Scott, Arthur A., 3,812,832.

Eaton Yale td.: *See—*
Jasinski, Stanley C.; Wenstrup, Leo J.; and Duffty, Bryant, 3,812,892.

Ebauches S.A.: *See—*
Wiget, Fridolin, 3,812,669.

Eberle, Fritz: *See—*
Koplow, Harold Stanley; Eberle, Fritz; Ho, Shu-Kuang; and Lesnick, Edward, 3,812,945.

Ebner, Heinrich: *See—*
05/28/74; Ebner, Heinrich; and Enenkel, Anton, 3,813,086.

Ed. Geistlich Sohne A.G. fur Chemische Industrie: *See—*
Pfirrmann, Rolf Wilheim; and Hofstetter, Emil, 3,813,387.

Edax International, Inc.: *See—*
Barnhart, Morris W.; and Russ, John C., 3,813,545.

Edclif Instruments: *See—*
Pitzer, Robert L., 3,812,727.

Edmondson, Gerald Keith: *See—*
Benisek, Ladislav; Winterbottom, Kenneth; Shaw, Trevor; and Edmondson, Gerald Keith, 3,813,220.

Edwards, Harrison F.; and Pannullo, Louis A., to Lewis Engineering Company, The. Electromagnetic motive device. 3,813,566, Cl. 310-36.000.

Eggert, Thomas F.: *See—*
Westergren, George A.; Koland, David G.; and Eggert, Thomas F., 3,812,659.

Eguchi, Isamu; and Hiratake, Susumu, to Daido Seiko Kabushiki Kaisha. Method for heating vacuum degassing container. 3,813,469, Cl. 13-9.000.

Eisele, Hermann: *See—*
Bauman, Gunther; Schmidt, Peter; Eisele, Hermann; and Wahl, Josef, 3,812,710.

Eisen- und Drahtwerk Erlau Aktiengesellschaft: *See—*
Witzel, Gunter; and Muller, Anton, 3,812,896.

Eklund, Melvin H.: *See—*
Elmer, Ben R.; and Eklund, Melvin H., 3,813,652.

Ekstrom, Per-Olof, to AB Centralsug. Garbage disposal system. 3,813,128, Cl. 302-39.000.

Electrothermal Engineering Limited: *See—*
Ward, Henry Arthur John, 3,813,215.

Elektriska Svetsnings AB: *See—*
Jorneskog, Karl Oskar Inge, 3,813,213.

Elektroschmelzwerk Kempten GmbH: *See—*
Lipp, Alfred, 3,813,252.

Elkins, Johnny C.; and Theriot, Gilbert A., said Elkins assor. to said Theriot, Gilbert A. Indexing means for wall panel openings. 3,812,587, Cl. 33-138.000.

Elliott Brothers (London) Limited: *See—*
Whalen, Francis Cuthbert, 3,812,715.

Elliott, Howard A.; and Grebik, Stephen J., to Essex International, Inc. Spark plug terminal. 3,813,645, Cl. 339-259.00r.

Elliott, John Scotchford; Jayne, Gerald John Joseph; Crook, Monty Frederick; and Harrington, Colin John, to Burmah Oil Trading Limited. Derivatives of glycols, glycol ethers and glycol esters. 3,813,341, Cl. 252-77.000.

Ellmore, John W., to Allister Manufacturing Company, Inc. Automatic reversing control equipment. 3,813,590, Cl. 318-266.000.

Elmer, Ben R.; and Eklund, Melvin H., to Honeywell Information Systems, Inc. Memory address transformation system. 3,813,652, Cl. 340-172.500.

Emden, Helmut Huber; Hubele, Adolf; and Klahre, Guenter, to Ciba-Geigy AG. 8-Oxyquinoline- and 8-oxyquinaldine acrylates. 3,813,399, Cl. 260-287.00x.

Emerson Electric Co.: *See—*
Drugmand, Lester D., 3,812,580.
Kinsella, Howard R., 3,813,625.

Emery Industries, Inc.: *See—*
Boehringer, Raymond H.; Wilson, Ronald M.; and Margeson, Mark A., 3,813,339.

EMI Limited: *See—*
Green, Ian MacDonald, 3,813,490.

Emmert, Reinhold, to Grundig E.M.V. Elektro-Mechanische Versuchsanstalt Max Grundig. Office dictation/transcription machine. 3,813,691, Cl. 360-90.000.

Emoto, Kazuhiro: *See—*
Futaki, Kiyoshi; Tsukahara, Hirokazu; and Emoto, Kazuhiro, 3,813,248.

Emura, Tomoyuki: *See—*
Ito, Ikoh; Sekihara, Takeshi; and Emura, Tomoyuki, 3,813,373.

Enenkel, Anton: *See—*
05/28/74; Ebner, Heinrich; and Enenkel, Anton, 3,813,086.

Engelfried, Werner, to Terrot, C., & Soehne. Jack and needle actuator for a circular knitting machine. 3,812,691, Cl. 66-50.00r.

Engelhardt, Bernard H.: *See—*
Mintz, Marcus; and Engelhardt, Bernard H., 3,812,642.

Engelhart, Donald Spencer; and Engelhart, Ned Henry. Method of and means for flash drying naturally occurring oilseeds. 3,812,585, Cl. 34-10.000.

Engelhart, Donald Spencer; and Engelhart, Ned Henry. Method of and means for flash drying naturally occurring oilseeds. 3,812,595, Cl. 34-10.000.

Engelhart, Ned Henry: *See—*
Engelhart, Donald Spencer; and Engelhart, Ned Henry, 3,812,585.
Engelhart, Donald Spencer; and Engelhart, Ned Henry, 3,812,595.

Engineering Corporation of America: *See—*
Hauskins, John B., Jr., 3,812,931.

English Electric Valve Company, Limited: *See—*
Scholz, Hans, 3,813,572.

Englund, Hakan; Eriksson, Ronny; and Nilsson, Bengt, to Allmanna Svenska Elektriska Aktiebolaget. Means for taking samples out of a reaction vessel containing alkaline liquid under pressure. 3,812,721, Cl. 73-422.00r.

Epping, Winfried: *See—*
Ridder, Hubert; Epping, Winfried; and Icking, Paul, 3,812,823.

Eriksson, Ronny: *See—*
Englund, Hakan; Eriksson, Ronny; and Nilsson, Bengt, 3,812,721.

Erni Limited: *See—*
Quarmby, David John, 3,813,646.

Ertl, Franz: *See—*
Geyken, Erwin; Dawidowitsch, Peter; and Ertl, Franz, 3,812,870.

Ervast, Armas, to Messrs. Tiwi Oy. Method and apparatus for cutting veneer produced by means of turning on a lathe into sheets with uniform fibre configuration. 3,812,893, Cl. 144-326.000.

Ervin, Gerald A., 40% to Ford, Samuel W. Flexible electrically conductive chain and method of making the same. 3,813,478, Cl. 174-70.00r.

Escher, William J. D., to CCI Aerospace Corporation. Supercharged ejector ramjet aircraft engine. 3,812,672, Cl. 60-244.000.

Espenschied, Helmut; and Weyer, Herbert, to Bosch, Robert, G.m.b.H. Hydraulic system. 3,812,942, Cl. 192-91.00r.

Essex International, Inc.: *See—*
Brebik, Stephen J.; and Anthony, Roger B., 3,813,637.
Elliott, Howard A.; and Grebik, Stephen J., 3,813,645.
Hartz, Marvin E., 3,813,643.

Etablissements C. Delachaux: *See—*
Bommart, Patrick Theodore, 3,813,502.

Ethiopian Science Foundation: *See—*
Lemma, Aklilu; Parkhurst, Robert M.; and Skinner, William A., Jr., 3,813,383.

Evans, Delme, to Lilly Industries, Limited. 7H-thiazolo-[3,2-a]pyrimidin-7-ones. 3,813,360, Cl. 260-25.00a.

Evans, Thomas Ernest: *See—*
Flint, George Norman; Evans, Thomas Ernest; and Hart, Anthony Christopher, 3,813,239.

Ezekiel, Aaron David; Thurston, Elvin Frederick William; Harper, Michael Frederick; and Wood, Malcolm Barlow, to Ilford Limited. Light sensitive photographic material. 3,813,249, Cl. 96-67.000.

Faber-Castell, A. W.: *See—*
Katz, Otto, 3,813,175.

Factory Mutual Research Corporation: *See—*
Livingston, William L., 3,812,915.

Fader, John H.; Keijzer, Johan H.; Graulus, Marcel J. R.; and Beets, Roland H. C., to Monroe Belgium N.V. Shock absorber. 3,812,938, Cl. 188-322.000.

Falletta, Thomas S.; and Pugliese, Paul Jones, to Harcourt Brace Jovanovich, Inc. Box for tape reels. 3,812,960, Cl. 206-387.000.

Fantozzi, Louis J., to Xerox Corporation. Control logic for trouble detection and recovery. 3,813,157, Cl. 355-14.000.

Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See—*
Aumuller, Walter; Weyer, Rudi; and Heerdt, Ruth, 3,813,398.
Hartwimmer, Robert; and Weiss, Eduard, 3,813,449.
Muller-Schiedmayer, Gunther; Muller, Heinz; Hubner, Herbert; and Ulm, Klaus, 3,813,441.
Neises, Helmut, 3,813,253.

Farkas, Eugene: *See—*
Bach, Nicholas J.; and Farkas, Eugene, 3,813,419.

Farque, Claud Anthony, to Citation Manufacturing Company, Inc. Self-propelled golf cart. 3,812,929, Cl. 180-98.000.

Faure, Alphonse W., to C.S.S. Machine and Tool Company, Inc. Adjustable air-cylinder support for 90 degree push-out in glassware forming equipment. 3,812,690, Cl. 65-260.000.

Faust, Warren R.: *See—*
Douglas, George H.; Faust, Warren R.; and Smith, Herchel, 3,813,420.

Feeman, James F., to Crompton & Knowles Corporation. Blue anthraquinone acid dyes. 3,813,402, Cl. 260-372.000.

Feinberg, Robert S., to Cryplex Industries, Inc. Method of making a heat resistant, vapor free cooking utensil. 3,813,256, Cl. 117-47.00h.

Feldman, Jeffrey M.: *See—*
Harrison, Stanley; and Feldman, Jeffrey M., 3,813,011.

Feldman, Jerome M., to Dairy Cap Corporation. Tamper-proof closure cap. 3,812,994, Cl. 215-256.000.

Fellwock, Charles G.; Hortin, Kenneth L.; and Tillman, Harry L., to Whirlpool Corporation. Refrigerator cabinet. 3,813,137, Cl. 312-214.000.

Fenske, Howard D. Laterally and vertically shiftable auger loaders. 3,812,607, Cl. 37-4.000.

Ferchland, Harold W., to General Motors Corporation. Method of making a porous laminated metal-bonded cutting wheel. 3,813,230, Cl. 51-297.000.

Fergg, Berthold: *See—*
Zahn, Wolfgang; Fergg, Berthold; and Knapp, Walter, 3,813,158.

Feucht, Robert H.; and Jones, Lawrence R., to Goodyear Tire & Rubber Company, The. Method and apparatus for making hose. 3,813,313, Cl. 156-156.000.

Fielder, Frederick D.: *See—*
Clifton, David A.; and Fielder, Frederick D., 3,813,654.

Fischer, Adolf, to Badische Anilin-& Soda-Fabrik Aktiengesellschaft. Herbicide. 3,813,237, Cl. 71-117.000.

Fischer, Frank E., to Consolidated Edison Company of New York, Inc. Electric power cable apparatus for transmitting power from a floating structure. 3,813,477, Cl. 174-70.00r.

Fischer, Herbert Corliss; and Fischer, Herbert Corliss, Jr. Prestressed elements. 3,813,098, Cl. 273-72.00r.

Fischer, Herbert Corliss, Jr.: *See—*
Fischer, Herbert Corliss; and Fischer, Herbert Corliss, Jr., 3,813,098.

Fischler, Hans-Michael: *See—*
Heine, Hans-Georg; Fischler, Hans-Michael; and Hartmann, Willy, 3,813,432.

Fisher Controls Company, Inc.: *See—*
Tiffany, Floyd L., 3,813,578.

Fisher, William M., to General Electric Company. Disconnect terminal board. 3,813,642, Cl. 339-198.00r.

Fisker, Jens Erik; and Sondergaard, Per, to Pedershaab Maskinfabrik A/S. Device for molding pipe having a spigot end. 3,813,203, Cl. 425-441.000.

Fleck, Elmer E., to Chemed Corporation, mesne. Screw-on type closure for a bubbler tube. 3,813,223, Cl. 23-259.000.

Fleischhacker, Joseph F.; and Hruby, Thomas W., to Tescom Corporation. Pressure regulator assembly. 3,812,877, Cl. 137-505.420.

Fletcher Brothers (Castings) Limited: *See—*
Fletcher, Thomas Sydney, 3,813,069.

Fletcher, Thomas Sydney, to Fletcher Brothers (Castings) Limited. Mounting device for furniture. 3,813,069, Cl. 248-188.100.

Flint, George Norman; Evans, Thomas Ernest; and Hart, Anthony Christopher, to International Nickel Company, Inc., The. Corrosion-resistant nickel-iron alloy. 3,813,239, Cl. 75-122.000.

Flottorp, Thomas. Boot and shoe asemblies. 3,812,601, Cl. 36-2.50c.

Folson, Henry J.: *See—*
Forssell, Dag C. G.; and Folson, Henry J., 3,812,805.

Forbes, Hampton E., Jr., to Westvaco Corporation. Multi-product carton. 3,812,957, Cl. 206-45.140.

Forbro Design Corporation: *See—*
Gately, Joseph R., 3,813,666.

Ford, Samuel W.: *See—*
Ervin, Gerald A., 3,813,478.

Forester, John K.: *See—*
Hines, Robin H.; Hollinshead, William L.; and Forester, John K., 3,813,165.

Forker, Ray B., Jr.; and Panzarino, Joseph N., to Corning Glass Works. Process for making carbon-containing glasses. 3,813,232, Cl. 65-23.000.

Forsheda Ideutveckling AB: *See—*
Derman, Karl Gustav Einar, 3,813,102.

Forssell, Dag C. G.; and Folson, Henry J., to Vector Company. Inflatable pontoon boat. 3,812,805, Cl. 114-61.000.

Foss, Norman A.; and Ward, Samuel A., to Columbia Broadcasting System, Inc. MOS photodiode. 3,813,541, Cl. 250-211.00j.

Foster, Beatrice D. Shield for downwardly diverting exhaled gases from anesthesiologist. 3,813,092, Cl. 269-322.000.

Foster, Berry W. Rotary vane device for compressor, motor or engine. 3,813,191, Cl. 417-406.000.

Foster Wheeler Corporation: *See—*
Polcer, John; Barratt, Robert O.; and Roberts, John, 3,812,824.

Polcer, John; Barratt, Robert O.; and Roberts, John, 3,812,825.
Fowler, Joe R., to Texaco Inc. Methods and apparatuses for transmission of longitudinal and torque pulse data from drill string in well while drilling. 3,813,656, Cl. 340-18.01d.
Fox, William Albert: *See—*
Wright, William Howell; Bingham, Alex John; and Fox, William Albert, 3,813,366.
Foxboro Company, The: *See—*
Prescott, Robert C., 3,812,767.
Francis, G. V.: *See—*
Robertson, Robert C.; and Francis, G. V., 3,812,632.
Frank, Helmut; Maus, Otfrid; and Tary, Endre, to Schenck, Carl, Maschinenfabrik GmbH. Balancing apparatus. 3,812,725, Cl. 73-462.000.
Franzen, G.; Hillenkamp, Franz; Kaufman, Raimund; and Remy, Ernst, to Remy, Ernst. Method for evaporating, destroying, exciting and/or ionizing specimen material limited to micro-regions and arrangement for carrying out this method. 3,813,544, Cl. 250-281.00.
Fraze, Ermal C., mesne: *See—*
Brown, Omar L., 3,812,803.
Frederick, Eugene G.; Morse, Albert I.; and Simmonds, Robert C., Jr., to USM Corporation. Shoe molds. 3,813,201, Cl. 425-242.000.
Freeman, Jerry H., to Reflect-O-Lite Manufacturing Company. Light fixture for vehicles. 3,813,535, Cl. 240-57.000.
French, David Walter, to Johns-Manville Corporation. Plastic pipe thrust resistant joint. 3,813,115, Cl. 285-92.000.
Fricke, Hans D.: *See—*
Burr, John W.; Fricke, Hans D.; and Sobieniak, Mathew G., 3,812,671.
Fricklas, Richard Leon: *See—*
Olszyk, Bernard John; and Fricklas, Richard Leon, 3,813,280.
Friesner, Charles E., to Industrial Plastic Specialties Company. Apparatus for producing trim strip assembly. 3,813,199, Cl. 425-113.000.
Frings, Heinrich, Firma: *See—*
05/28/74; Ebner, Heinrich; and Enenkel, Anton, 3,813,086.
Frisch, Kurt C.: *See—*
Wood, Louis L.; Kehr, Clifton L.; and Frisch, Kurt C., 3,812,618.
Wood, Louis L.; and Frisch, Kurt C., 3,812,619.
Frisch, Kurt C.; Reegen, Sidney; and Dieter, Jerry A., to Atlantic Richfield Company. High molecular weight cyclic nitrile adduct compositions. 3,813,365, Cl. 260-77.50r.
Frost, Peter: *See—*
Broadbent, Arnold; and Frost, Peter, 3,813,551.
Fuhr, Kenneth H.: *See—*
Doherty, George O. P.; and Fuhr, Kenneth H., 3,813,408.
Fuji Photo Film Co., Ltd.: *See—*
Honjo, Satoru; Fukushima, Osamu; and Osada, Chiaki, 3,813,267.
Takamura, Yoshihiko; Nakajima, Yosuke; Ohi, Reiichi; and Miyazako, Takushi, 3,813,250.
Fujisawa, Kiyoji: *See—*
Mino, Mineo; Fujisawa, Kiyoji; and Tanabe, Kenzo, 3,813,484.
Fujisawa Pharmaceutical Co., Ltd.: *See—*
Tensho, Akira; Kamiya, Takashi; Yoshihisa, Saito; Hashimoto, Masashi; and Hideo, Seki, 3,813,394.
Fujishige, Sadao, to Sankyo Kogaku Kogyo Kabushiki Kaisha. Still and slow motion control unit for a projector. 3,813,154, Cl. 352-169.000.
Fukawawa, Nobuo: *See—*
Aya, Masahiro; Miyamoto, Masao; Fukawawa, Nobuo; and Ohsuga, Shigeki, 3,813,405.
Fukaya, Takeshi: *See—*
Seino, Hiroshi; Suzuno, Shingichi; Takeya, Yoshiaki; Tobita, Tsutomu; and Fukaya, Takeshi, 3,812,565.
Fukuda, Kinya: *See—*
Kawaguchi, Kiyoshi; Miyamatsu, Yasunori; Kamoi, Arao; and Fukuda, Kinya, 3,812,697.
Miyamatsu, Yasunori; Kamoi, Arao; and Fukuda, Kinya, 3,812,701.
Fukunari, Sunao: *See—*
Nakanishi, Michio; Munakata, Tomohiko; Setoguchi, Shinro; and Fukunari, Sunao, 3,813,395.
Fukuroi, Takeo, to Yoshida Kogyo Kabushiki Kaisha. Method and apparatus for removing interlocking elements from slide fastener chain. 3,812,573, Cl. 29-427.000.
Fukushima, Osamu: *See—*
Honjo, Satoru; Fukushima, Osamu; and Osada, Chiaki, 3,813,267.
Fullaway, Altan Vanstone, to Weyerhaeuser Company. Log handling apparatus. 3,812,951, Cl. 198-34.000.
Fumia, Arthur, Jr.: *See—*
Brooker, Leslie G. S.; Fumia, Arthur, Jr.; and Heseltine, Donald W., 3,813,397.
Funabashi, Shinichiro: *See—*
Murayama, Naohiro; Katto, Takayuki; and Funabashi, Shinichiro, 3,813,461.
Funahashi, Takaji. Self-inking roller. 3,812,782, Cl. 101-367.000.
Funakoshi Pharmaceutical Co., Ltd.: *See—*
Itokawa, Hideji, 3,812,586.
Futaki, Kiyoshi; Tsukahara, Hirokazu; and Emoto, Kazuhiro, to Mitsubishi Paper Mills, Ltd. Organic photoconductive composition comprising an organic photoconductive compound and a sensitizing compound having an active methylene group. 3,813,248, Cl. 96-1.50.
GAF Corporation: *See—*
Szymber, Oleg; and Shim, Norman, 3,813,155.
Gall, Martin; and Hester, Jackson B., Jr., to Upjohn Company, The. Certain triazolyl benzhydrol compounds. 3,813,412, Cl. 260-308.00r.
Gambaretto, Gian Paolo; Tlaamini, Gianpietro; and Palma, Giancarlo, to Montecatini Edison S.p.A. Process for the chlorination of polymeric materials. 3,813,370, Cl. 260-88.20s.
Garrett Comtronics Corporation: *See—*
Cone, George W.; and Kinzie, James E., 3,813,533.
Gatel, Gilbert: *See—*
Chevalier, Gabriel; and Gatel, Gilbert, 3,813,530.
Gately, Joseph R., to Forbro Design Corporation. Power supply mode indicator lamp circuit. 3,813,666, Cl. 340-248.00a.
Gates, Francis J.: *See—*
Burch, Darrell E.; Gates, Francis J.; Gryvnak, David A.; and Pembrook, John D., 3,813,146.
Gates Rubber Company, The: *See—*
Kerst, Al F., 3,813,456.
Steckel, Elmer A.; Schaffer, William G.; and Payne, Roger A., 3,813,314.
Gatsis, John G., to Universal Oil Products Company. Solvent extraction of coal utilizing a peteropoly acid catalyst. 3,813,329, Cl. 208-9.000.
Gattuso, Marion J.; and Arnold, Robert J., to Universal Oil Products Company. Color stabilization of petroleum distillates. 3,813,332, Cl. 208-290.000.
Gaunt, Conrad L.: *See—*
Dyer, Clarence H.; Gaunt, Conrad L.; and Jarvis, Edward D., 3,813,294.
Gebel, Kurt M.; and Price, Ralph E., to Landis Tool Company. Pressure indicating device for hydrostatic bearings. 3,812,627, Cl. 51-238.00r.
Gebr. Schmeing: *See—*
Ridder, Hubert; Epping, Winfried; and Icking, Paul, 3,812,823.
Gebruder Linck: *See—*
Reuter, Alfred, 3,812,891.
Gebrueder Buehler AG: *See—*
Manser, Josef, 3,813,082.
Geil, Fred G., to United States of America, Navy. Instant replay helium speech unscrambler using slowed tape for correction. 3,813,687, Cl. 360-8.000.
Geiser, Edward M., to Universal Oil Products Company. Lubricating oil composition. 3,813,228, Cl. 44-58.000.
Genbauffe, Francis S.: *See—*
Branson, Charles D.; and Genbauffe, Francis S., 3,813,078.
General Electric Company: *See—*
Balchunas, Charles A., 3,813,641.
Boice, William Knight, 3,813,589.
Chakrabarty, Ananda M., 3,813,316.
Clausen, Edward M.; and Clemmer, Robert G., 3,813,205.
De Zuba, George P.; Berger, Abe; and Selin, Terry G., 3,813,364.
Dinger, Edward H., 3,813,591.
Fisher, William M., 3,813,642.
Klappert, Willi, 3,812,554.
Koch, Robert E., 3,813,627.
Koval, Leonide P., 3,813,619.
Lipstein, Norman J., 3,813,260.
Mason, Lowell M., 3,812,570.
Mitchell, Graham R., 3,813,506.
Nickstadt, Gerhard, 3,812,736.
O'Connell, William J., 3,813,358.
Polcer, John; Barratt, Robert O.; and Roberts, John, 3,812,824.
Polcer, John; Barratt, Robert O.; and Roberts, John, 3,812,825.
Rinehart, Dean C., 3,813,193.
Scheldorf, Owen H., 3,813,192.
Scott, Stanley J.; Noroski, William J.; and Rublack, Wilfred D., 3,813,568.
Tice, James B.; and Bowler, Colin E. J., 3,813,593.
Titus, Charles H.; and Wittle, J. Kenneth, 3,812,620.
Traver, Frank J., 3,813,425.
General Motors Corporation: *See—*
Beck, Roger W.; and Yoder, Douglas J., 3,813,311.
Dyer, Clarence H.; Gaunt, Conrad L.; and Jarvis, Edward D., 3,813,294.
Ferchland, Harold W., 3,813,230.
General Telephone & Electronics Laboratories: *See—*
Carlsen, W. John, 3,813,139.
General Tire & Rubber Company, The: *See—*
Molbert, Robert A., 3,813,269.
George Lithograph Company: *See—*
Schlegel, P. L., Jr., 3,813,159.
Gergely, Alex S., to Phillip Morris Incorporated. Jam prevention unit for extrusion process apparatus. 3,813,200, Cl. 425-140.000.
Gertsch AG: *See—*
Gertsch, Ernst; and Gertsch, Ulrich, 3,812,602.
Gertsch, Ernst; and Gertsch, Ulrich, to Gertsch AG. Ski boot. 3,812,602, Cl. 36-2.5al.
Gertsch, Ulrich: *See—*
Gertsch, Ernst; and Gertsch, Ulrich, 3,812,602.
Gerzmava, Dusheli Vladimirovich: *See—*
Drobich, Oleg Pavlovich; Pritomanov, Alexei Evgenievich; Rokutov, Viktor Petrovich; Kirvalidze, Nikolai Spiridonovich; Gerzmava, Dusheli Vladimirovich; and Mandzjuk, Boris Valentinovich, 3,813,335.
Gesellschaft fur Kernforschung mbH: *See—*
Malang, Siegfried, 3,813,287.

Geusic, Joseph Edward: *See—*
Danylchuk, Irynej; Geusic, Joseph Edward; and Nelson, Terence John, 3,813,661.
Geyer, Wolf, to Vereinigte Flugtechnische Werke-Fekker Gelleschaft mit beschrankter Haftung. Apparatus for supervising equipment with warning lights. 3,813,664, Cl. 340-248.00r.
Geyken, Erwin; Dawidowitsch, Peter; and Ertl, Franz, to Agfa-Gevaert Aktiengesellschaft. Apparatus for processing photographic material or the like. 3,812,870, Cl. 134-122.000.
Gierth, Volker: *See—*
Klocke, Hans Joachim; Stockburger, Dieter; Gierth, Volker; and Zeitler, Gerhard, 3,813,375.
Gikow, Emanuel, to United States of America, Army. Printed circuit board vibration snubber. 3,813,582, Cl. 317-101.00h.
Gilbert, John W.; and Panagrossi, Ahmed, to International Paper Company, mesne. Retention catheter. 3,812,860, Cl. 128-349.00b.
Gilbert, Ronald Edward; and Monley, Richard Leo, Jr., to Gulf Research & Development Company. Sandpaper. 3,813,231, Cl. 51-298.000.
Giles, Grady E.: *See—*
Kitterman, Richard E.; and Giles, Grady E., 3,813,525.
Gillette Company, The: *See—*
Samsing, Rolf, A., 3,812,958.
Gilliam, Clarence W., to United States of America, Navy. Chemical lighting device having interlocking ampoules. 3,813,534, Cl. 240-2.250.
Gilliland, William J. Holder for handled tools to be sharpened. 3,812,740, Cl. 76-82.000.
Gillis, Marina N.; and Mazzeo, Michael P., to Thiokol Chemical Corporation. Non-discoloring thermosetting polyurethane lacquer. 3,813,361, Cl. 260-29.2tw.
Gillman Industries, Inc.: *See—*
Ziegler, Arnold H.; and Schweitzer, George J., 3,812,800.
Giorgi, Tiziano: *See—*
delle Porta, Paolo; Giorgi, Tiziano; Kindl, Bruno; and Zucchinelli, Mario, 3,813,266.
Girling Limited: *See—*
Cochrane, Robin Adam, 3,812,675.
Giunta, Grace G. Skin conditioning article. 3,812,849, Cl. 128-67.000.
Givens, Edwin N.; Plank, Charles J.; and Rosinski, Edward J., to Mobil Oil Corporation. Process for aromatizing olefins in the presence of easily cracked paraffins. 3,813,330, Cl. 208-66.000.
G.K. Systems, Inc.: *See—*
Gregory, Robert B., 3,813,204.
Glass, Alastair Malcolm: *See—*
Abrams, Richard Lee; and Glass, Alastair Malcolm, 3,813,550.
Glass, Emmett F.: *See—*
Yound, Robert G.; Trible, Paul S.; and Glass, Emmett F., 3,812,777.
Glass, John P., trading as Cava Industries: *See—*
Hollander, Edward F., Jr., 3,813,224.
Glass, Marvin & Associates: *See—*
Glass, Marvin I.; Breslow, Jeffrey D.; and Jaworski, Eugene, 3,812,613.
Glass, Marvin I.; Breslow, Jeffrey D.; and Jaworski, Eugene, to Glass, Marvin & Associates. Educational figure toy. 3,812,613, Cl. 46-119.000.
Glassman, Terrence A. Storage assembly. 3,812,977, Cl. 211-177.000.
Glenfield & Kennedy Limited: *See—*
Miller, Eric, 3,812,871.
Globe Tool and Engineering Company, The: *See—*
Compton, Jerry L.; and Seitz, David R., 3,812,577.
Globe-Union Inc.: *See—*
Kirchberger, Walter Carl, 3,813,024.
Gobin, Michel Roland: *See—*
Bouiller, Jean Georges; Gobin, Michel Roland; Lacroix, Armand Jean-Baptiste; and Bauger, Louis Jules, 3,813,185.
Godfrey, John J., to Grace, W. R., & Co. Transvinylation catalyst. 3,813,348, Cl. 252-431.00n.
Golban, Eduard Vasilievich: *See—*
Rogalsky, Anatoly Viktorovich; Markevich, Vitaly Mikhailovich; Kheifets, Georgy Naumovich; Zaichenko, Jury Leonidovich; Baburov, Valery Efremovich; Pavlovsky, Vladimir Petrovich; Golban, Eduard Vasilievich; Pechennik, Leonid Naumovich; Knyazhinsky, Zakhar sipovich; Bogatov, Nikolai Alexandrovich; Raichuk, Jury Isaakovich; Zaritsky, Vaktor Nikolaevich; and Grodzitsky, Evgeny Fedorovich, 3,812,909.
Goldman, Arthur J.; Rowe, D. Garth; and Jones, Cecil Roy, to Transfer Systems Incorporated. Fuel element with failure indicator. 3,813,286, Cl. 176-19.00r.
Goldschmidt, Alfred, to Chevron Research Company. Reaction products of amines and dithiophosphoric acids or salts. 3,813,336, Cl. 252-32.70e.
Gommesen, Hans, to Smidth, S. L., & Co. Cooler tubes for rotary kiln. 3,813,211, Cl. 432-80.000.
Goncharov, Boris Konstantinovich: *See—*
Neshumaev, Anatoly Dmitrievich; Goncharov, Boris Konstantinovich; Smolyar, Anatoly Alexeevich; and Chigir, Leonid Nikolaevich, 3,812,763.
Gooch, Beverly R.; and Schiller, Edward, to Ampex Corporation. Magnetic head with protective pockets of glass adjacent the corners of the gap. 3,813,693, Cl. 360-119.000.
Goodman, Mallard S. Detachable spiked shoe protective cover. 3,812,603, Cl. 36-2.5an.
Goodrich, B. F., Company, The: *See—*
Smith, Dean G., 3,813,104.
Goodyear Tire & Rubber Company: *See—*
Saltman, William M.; and Auerbach, Melvin, 3,813,455.
Goodyear Tire & Rubber Company, The: *See—*
Conger, Marvin T., 3,813,463.
Feucht, Robert H.; and Jones, Lawrence R., 3,813,313.
Neubert, Terry C., 3,813,259.
Perry, Dale C., 3,813,374.
Riggs, Robert S., 3,813,271.
St Cyr, David R., 3,813,357.
West, James C., 3,813,257.
Wideman, Lawson G., 3,813,453.
Gould Inc.: *See—*
Toaz, Milton W., 3,812,563.
Grace, W. R., & Co.: *See—*
Godfrey, John J., 3,813,348.
Marans, Nelson S., 3,813,434.
Wood, Louis L.; Kehr, Clifton L.; and Frisch, Kurt C., 3,812,618.
Wood, Louis L.; and Frisch, Kurt C., 3,812,619.
Grant, Jon Halloran; and Pauly, Raymond W., to Hughes Aircraft Company. Current mode switch for high speed digital-to-analog conversion. 3,813,560, Cl. 307-253.000.
Grant, Robert A.: *See—*
Rogne, Conrad O., Jr.; and Grant, Robert A., 3,813,126.
Grants, Valdis: *See—*
Struger, Odo J.; Grants, Valdis; and Searcy, William W., 3,813,649.
Graulus, Marcel J. R.: *See—*
Fader, John H.; Keijzer, Johan H.; Graulus, Marcel J. R.; and Beets, Roland H. C., 3,812,938.
Graves, Fred L.: *See—*
Torrence, James D.; and Graves, Fred L., 3,813,047.
Greason, Craig P. Continuous web with separable segmented envelopes and order coupons. 3,813,028, Cl. 229-70.000.
Grebik, Stephen J.: *See—*
Elliott, Howard A.; and Grebik, Stephen J., 3,813,645.
Greco, Francesco: *See—*
Chiolle, Antonio; Credali, Lino; Longi, Paolo; Greco, Francesco; and D'Angelo, Romano, 3,813,354.
Green, Ian MacDonald, to EMI Limited. Colour television cameras. 3,813,490, Cl. 178-5.4st.
Greene, Helen R. Soil-loosening rotary hoe. 3,812,920, Cl. 172-350.000.
Greenhalgh, Howard N. Parachutist's glider. 3,813,061, Cl. 244-16.000.
Gregory, Robert B., to G.K. Systems, Inc. Lip adjustment for extrusion die. 3,813,204, Cl. 425-466.000.
Greiffenstern, Karl Von, to Polysius AG. Hammer crusher. 3,813,045, Cl. 241-88.400.
Greis, Ingemar Joel, to Kommaditobolaget United Sterling (Sweden) AB & Co. Hot gas engine with co-axial cylinder bores of differing diameter. 3,812,677, Cl. 60-517.000.
Griesing, John E.: *See—*
Baldyga, Eugene P.; and Griesing, John E., 3,812,646.
Griffith, John Q., III: *See—*
Coppock, Walter J.; Amaroso, James R.; and Griffith, John Q., III, 3,813,338.
Griffiths, Franklin E. Rotary engine. 3,812,828, Cl. 123-8.450.
Grip-Pak, Inc.: *See—*
Cunningham, Ernest R., 3,812,962.
Grodziskie Zaklady Farmaceutyczne "Polfa" Przedsiebiorstwo Panstwowe: *See—*
Kycia, Henryk; Chmielewska, Danuta; Rolak, Hanna; Michno, Zbigniew; Zaniuk, Jan; Surgiewicz, Janusz; Stefaniak, Ferdynand; Lenkowski, Przemyslaw; and Kobosko, Anna, 3,813,415.
Grodzitsky, Evgeny Fedorovich: *See—*
Rogalsky, Anatoly Viktorovich; Markevich, Vitaly Mikhailovich; Kheifets, Georgy Naumovich; Zaichenko, Jury Leonidovich; Baburov, Valery Efremovich; Pavlovsky, Vladimir Petrovich; Golban, Eduard Vasilievich; Pechennik, Leonid Naumovich; Knyazhinsky, Zakhar sipovich; Bogatov, Nikolai Alexandrovich; Raichuk, Jury Isaakovich; Zaritsky, Vaktor Nikolaevich; and Grodzitsky, Evgeny Fedorovich, 3,812,909.
Gromek, Joseph: *See—*
Nemeth, Edward; and Gromek, Joseph, 3,812,568.
Grossman, Sidney J., to United States of America, Army. Laser transceiver. 3,813,553, Cl. 250-347.000.
Grothe, Horst: *See—*
Bollig, Georg; Grothe, Horst; Knell, Bernhard; Thalmann, Armin; and Zeller, Josef, 3,812,900.
Grundig E.M.V. Elektro-Mechanische Versuchsanstalt Max Grundig: *See—*
Emmert, Reinhold, 3,813,691.
Grunewald, Rainer: *See—*
Sajben, Johannes Otto; Lippert, Axel; Stumpen, Klaus; and Grunewald, Rainer, 3,812,885.
Gryazev, Ivan Ivanovich: *See—*
Pshenichny, Gennady Ivanovich; Checheljuk, Yakov Zinovievich; and Gryazev, Ivan Ivanovich, 3,812,567.
Gryvnak, David A.: *See—*
Burch, Darrell E.; Gates, Francis J.; Gryvnak, David A.; and Pembrook, John D., 3,813,146.
GTE Laboratories Incorporated: *See—*
Buhrer, Carl F., 3,813,142.
Buhrer, Carl F., 3,813,660.

Cohen, Leonard D., 3,813,600.
GTE Sylvania Incorporated: *See—*
Szeverenyi, Nikolaus A.; and Thompson, David F., 3,813,629.
Gubler, Kurt: *See—*
Rutz, Hans; and Gubler, Kurt, 3,813,235.
Gueldner, Richard C.; Tumlinson, James H., III; Hardee, Dicky D.; Hedin, Paul A.; Thompson, Alonzo C.; and Minyard, James P., to United States of America, Agriculture. Boll-weevil sex attractant. 3,813,443, Cl. 260-586.00r.
Guerin, Daniel L. G., to Leflaive, Vincent Rene, Peltier, Guy and Manceau, Marcel. Injection moulding machine. 3,813,014, Cl. 222-413.000.
Guerra, Edward E.: *See—*
Davidsohn, Uryon S.; Short, John P.; Combs, Clyde, Jr.; and Guerra, Edward E., 3,813,584.
Guilleux, Robert. Detector apparatus. 3,813,565, Cl. 307-308.000.
Guinosso, Charles J.: *See—*
Sellstedt, John H.; Teller, Daniel M.; and Guinosso, Charles J., 3,813,386.
Gulf & Western Industrial Products Company: *See—*
Burgess, Lester E.; and Brownstein, Ronald G., 3,813,281.
Gulf Research & Development Company: *See—*
Carr, Norman L.; Massoth, Franklin E.; Stahlfeld, Donald L.; and Young, John E., Jr., 3,812,652.
Gilbert, Ronald Edward; and Monley, Richard Leo, Jr., 3,813,231.
Massoth, Franklin E.; and Young, John E., Jr., 3,812,653.
Wuenschel, Paul C., 3,812,912.
Gump, Klaus H.: *See—*
Di Edwardo, Andrew H.; and Gump, Klaus H., 3,813,219.
Gunby, Leslie, to PPG Industries, Inc. Bipolar electrolytic diaphragm cell having friction welded conductor/connector means. 3,813,326, Cl. 204-268.000.
Gurklis, Peter J., to Dow Chemical Company, The. Welded joint assembly. 3,813,002, Cl. 220-63.00r.
Gutierrez, Julian. Inter-actuating record holding structure. 3,812,975, Cl. 211-40.000.
Haas, Helmut: *See—*
Langmaack, Jurgen; and Haas, Helmut, 3,813,084.
Haas, Werner; and Isensee, Klaus-Staffen, to Siemens Aktiengesellschaft. Device for transmitting predetermined volumes of liquid from one container to another container. 3,812,890, Cl. 141-94.000.
Habermeier, Jurgen; Porret, Daniel; and Baumann, Dieter, to Ciba-Geigy Corporation. Epoxide resin mixtures. 3,813,352, Cl. 260-2.0ep.
Hackney, Thomas P., Jr.; and Kirwan, George B., to Hennessy Products, Incorporated. Transport merchandise container. 3,813,117, Cl. 292-54.000.
Hagen, James M.; and Haigh, Clayton M., to Xerox Corporation. Microfilm cartridge and adapter apparatus. 3,813,056, Cl. 242-197.000.
Haigh, Clayton M.: *See—*
Hagen, James M.; and Haigh, Clayton M., 3,813,056.
Hala, Alfred A. Method of fabricating a combination water and insulated wall assembly. 3,812,635, Cl. 52-741.000.
Hallesy, Harold W.; and Revenig, Howard C., to Decoto Aircraft, Inc. Locking mechanisms and actuator assemblies of coaxial locked remotely at selected locations after motions of a nearly complete circumferential one piece chamfered locking ring. 3,813,065,Cl. 244-115.000.
Hallock, Robert L., Jr. Sheet metal nail and apparatus for testing. 3,812,817, Cl. 116-114.00r.
Hallwood, Harry, to Midwesco-Enterprise, Inc. Cryogenic insulation. 3,812,886, Cl. 138-149.000.
Hamanaka, Wahei: *See—*
Nagata, Tadayoshi; and Hamanaka, Wahei, 3,812,796.
Hamburger, Edward O. Externally adjustable cam timer. 3,812,734, Cl. 74-243.0pc.
Hamerdinger, Randolph W.; and Dunn, Phillip D., to Xerox Corporation. Dynamic barrier for heat pipe. 3,812,905, Cl. 165-32.000.
Hampel, Gerald. Eyeglass frame. 3,813,152, Cl. 351-153.000.
Hanna, Daniel C. Wraparound brushing device. 3,812,549, Cl. 15-21.00d.
Hanson, Henry Lloyd. Locking device for hangers perforated boards. 3,813,070, Cl. 248-223.000.
Harada, Yasoo: *See—*
Tarui, Yasuo; Komiya, Yoshio; and Harada, Yasoo, 3,813,585.
Harcourt Brace Jovanovich, Inc.: *See—*
Falletta, Thomas S.; and Pugliese, Paul Jones, 3,812,960.
Hardee, Dicky D.: *See—*
Gueldner, Richard C.; Tumlinson, James H., III; Hardee, Dicky D.; Hedin, Paul A.; Thompson, Alonzo C.; and Minyard, James P., 3,813,443.
Hardy, Willuam C.; Schultze, Edward F.; and Shepard, John C., to Sun Oil Company. Method of formation consolidation. 3,812,913, Cl. 166-288.000.
Harper, Michael Frederick: *See—*
Ezekiel, Aaron David; Thurston, Elvin Frederick William; Harper, Michael Frederick; and Wood, Malcolm Barlow, 3,813,249.
Harrington, Colin John: *See—*
Elliott, John Scotchford; Jayne, Gerald John Joseph; Crook, Monty Frederick; and Harrington, Colin John, 3,813,341.
Harrington, Richard H. Rotatable strobascopic toy. 3,812,614, Cl. 46-228.000.
Harrison, Stanley; and Feldman, Jeffrey M. Aerosol can for dispensing materials in fixed volumetric ratio. 3,813,011, Cl. 222-136.000.
Hart, Anthony Christopher: *See—*
Flint, George Norman; Evans, Thomas Ernest; and Hart, Anthony Christopher, 3,813,239.
Hartemann, Pierre; and Dieulesaint, Eugene, to Thomson-CSF. Surface wave electromechanical filter. 3,813,618, Cl. 333-72.000.
Hartmann, Franz-Josef: *See—*
Benteler, Helmut; Hartmann, Franz-Josef; and Hefendehl, Heinz, 3,812,702.
Hartmann, Willy: *See—*
Heine, Hans-Georg; Fischler, Hans-Michael; and Hartmann, Willy, 3,813,432.
Hartwimmer, Robert; and Weiss, Eduard, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the preparation of fluorocarbon waxes. 3,813,449, Cl. 260-653.10r.
Hartz, Marvin E., to Essex International, Inc. Terminating of electrical conductors. 3,813,643, Cl. 339-223.00s.
Hasegawa, Goro; Nakamoto, Soichi; and Hosoe, Kazuya, to Canon Kabushiki Kaisha. Focus detector device. 3,813,679, Cl. 354-24.000.
Hasegawa, Yo: *See—*
Ikeda, Mitsusuke; Sato, Hisanao; Torii, Etsuko; Morimoto, Kazuhisa; and Hasegawa, Yo, 3,813,242.
Hashimoto, Masashi: *See—*
Tensho, Akira; Kamiya, Takashi; Yoshihisa, Saito; Hashimoto, Masashi; and Hideo, Seki, 3,813,394.
Hassell, David A.; and McMillin, John R., to Carnelius Company, The. Beverage dispenser. 3,813,010, Cl. 222-129.100.
Hastings, Edward D.: *See—*
Roland, David H.; and Hastings, Edward D., 3,812,978.
Hatch, Bruce O., to Thermal Dynamics Corporation. Electric arc torches. 3,813,510, Cl. 219-121.00p.
Hatch, Melvin J.; Yoshimine, Masao; Smith, Hugh B.; and Schmidt, Donald L., to Dow Chemical Company, The. Hydroxyarylmethylenesulfonium zwitterions. 3,813,413, Cl. 260-330.500.
Hatsukano, Yoshikazu; Nomiya, Kosei; and Torii, Shuichi, to Hitachi, Ltd. Flip-flop circuit. 3,813,564, Cl. 307-279.000.
Haughwitz, Rudiger D., to Squibb, E. R., & Sons, Inc. Benzimidazolinone compounds. 3,813,409, Cl. 260-306.700.
Hauni-Werke Korber & Co. KG: *See—*
Rudszinat, Willy; and Ludszeweit, Dieter, 3,812,950.
Haupt, Hans O. Vehicle wheel alignment checking apparatus. 3,812,592, Cl. 33-203.130.
Hauskins, John B., Jr., to Engineering Corporation of America. Sound barrier. 3,812,931, Cl. 181-33.00e.
Hayashi, Yasuo; and Adachi, Yoshiaki, to Kureha Kagaku Kogyo Kabushiki Kaisha. Process of the manufacture of dialkyltin oxide. 3,813,424, Cl. 260-429.700.
Hayes, Charles M., to Universal Oil Products Company. Manufacture of adsorbent composite. 3,813,347, Cl. 252-428.000.
Hayes, Harold B., to Lilly, Eli, and Company. Process for 7-aminocephalosporanic acid. 3,813,389, Cl. 260-243.00c.
Heady, Robert E.: *See—*
Armbruster, Frederick C.; Heady, Robert E.; and Cory, Robert P., 3,813,318.
Hedin, Paul A.: *See—*
Gueldner, Richard C.; Tumlinson, James H., III; Hardee, Dicky D.; Hedin, Paul A.; Thompson, Alonzo C.; and Minyard, James P., 3,813,443.
Hedman, Clarence L., Jr.; and Vartanian, Perry H., Jr., to SCM Corporation. Voltage-controlled liquid crystal X-Y display device. 3,813,145, Cl. 350-160.0lc.
Hedman, Jan-Olof, to Telefonaktiebolaget LM Ericsson. Electret microphone. 3,812,575, Cl. 29-594.000.
Heerdt, Ruth: *See—*
Aumuller, Walter; Weyer, Rudi; and Heerdt, Ruth, 3,813,398.
Hefendehl, Heinz: *See—*
Benteler, Helmut; Hartmann, Franz-Josef; and Hefendehl, Heinz, 3,812,702.
Heiba, El Ahmadi I.; and Dessau, Ralph M., to Mobil Oil Corporation. Substituted Gamma-butyrolactones derived from C_{18} and greater unsaturated acids. 3,813,416, Cl. 260-343.600.
Heilweil, Israel J.; and Srinivasan, Sundaresa, to Mobil Oil Corporation. Growth and recovery of cells of a hydrocarbon-utilizing microorganism. 3,813,290, Cl. 195-28.00r.
Heimberger, Werner; and Weigert, Wolfgang, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. 7-Aza-6,8-dioxa-bicyclo 3,2,1 octane. 3,813,410, Cl. 260-307.00f.
Heine, Charles A., to Alexander Manufacturing Company. Bottle cap remover. 3,812,741, Cl. 81-3.400.
Heine, Desire: *See—*
Lindeborg, Georg D.; and Heine, Desire, 3,812,985.
Heine, Hans-Georg; Fischler, Hans-Michael; and Hartmann, Willy, to Bayer Aktiengesellschaft. Substituted 1-hydroxy cyclopropane-1-carboxylic acids. 3,813,432, Cl. 260-514.00h.
Heinemeyer, Ben W., to Dow Chemical Company, The. Plastic railway crosstie. 3,813,040, Cl. 238-84.000.
Heinle, Preston J.: *See—*
Brouwers, Karel J.; and Heinle, Preston J., 3,813,379.
Heitland, Herbert; and Manderscheid, Peter, to Volkswagenwerk Aktiengesellschaft. Thermo regulated catalytic cleaner for exhaust gas. 3,813,226, Cl. 23-288.00f.

Helgeson, Peter L. Raytheon Company Portable camp stove. 3,812,839, Cl. 126-38.000.
Hellman, Per: *See—*
Backstrom, Sven Hjalmar; and Hellman, Per, 3,813,196.
Heltzen, John H. Collapsible luggage pouch for motorcycles. 3,813,018, Cl. 224-33.00r.
Hennessy Products, Incorporated: *See—*
Hackney, Thomas P., Jr.; and Kirwan, George B., 3,813,117.
Henniger, Peter Wolfgang, to American Home Products Corporation, mesne. 6-[(Lower alkylidene) iminooxycarbonamide]-penicillanic acids and method of their preparation. 3,813,385, Cl. 260-239.100.
Henry, Richard Dal. Glide slope indicator. 3,813,657, Cl. 340-26.000.
Herbenar, Edward J.; and Pozolo, Kenneth R., to TRW, Inc. Wear indicating joint. 3,813,178, Cl. 403-27.000.
Hercules Incorporated: *See—*
Simmons, Ronald L., 3,813,458.
Skidmore, Paul H., 3,813,308.
Thomson, J. Brent, 3,813,351.
Herczog, Andrew: *See—*
Asher, John W.; and Herczog, Andrew, 3,812,688.
Hermann, Gunter, to Masserschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Vehicle shock absorption system and high-pressure gas producing device therefor. 3,813,112, Cl. 280-15.0ab.
Hersey Products, Inc., mesne: *See—*
Kitterman, Richard E.; and Giles, Grady E., 3,813,525.
Hershman, Arnold: *See—*
Paulik, Frank E.; Hershman, Arnold; Knox, Walter R.; and Roth, James F., 3,813,428.
Herter, George L., to Herter's, Inc. One piece wad column and shot cup. 3,812,784, Cl. 102-95.000.
Herter's, Inc.: *See—*
Herter, George L., 3,812,784.
Heseltine, Donald W.: *See—*
Brooker, Leslie G. S.; Fumia, Arthur, Jr.; and Heseltine, Donald W., 3,813,397.
Hesener, Walter: *See—*
Weick, Heinz Hermann; Trueb, Viktor; and Hesener, Walter, 3,813,275.
Hester, Jackson B., Jr.: *See—*
Gall, Martin; and Hester, Jackson B., Jr., 3,813,412.
Hewitt, William Lloyd, to Cam-Stat Incorporated. Spark igniter for a plurality of gas burners. 3,813,581, Cl. 317-96.000.
Heynick, Louis N.: *See—*
Spindt, Charles A.; and Heynick, Louis N., 3,812,559.
Heyworth, Eugene R. Visual runway distance marker. 3,813,064, Cl. 244-114.00r.
Hideo, Seki: *See—*
Tensho, Akira; Kamiya, Takashi; Yoshihisa, Saito; Hashimoto, Masashi; and Hideo, Seki, 3,813,394.
Higashiyama, Kenji; and Hirata, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Device for measuring an activity of cobaltous ions. 3,813,324, Cl. 204-195.00m.
Higgs, Kenneth O.; Richmond, Robert C.; and Marsch, Lawrence F., to Texaco Inc. Consistometer. 3,812,706, Cl. 73-59.000.
Hill, Donald C., to Eaton Corporation. Piston ring. 3,813,106, Cl. 277-173.000.
Hillenkamp, Franz: *See—*
Franzen, G.; Hillenkamp, Franz; Kaufman, Raimund; and Remy, Ernst, 3,813,544.
Hilti Aktiengesellschaft: *See—*
Schmuck, Peter, 3,813,567.
Himmler, Conrad R., to Indramat-Gesellschaft fur Industrie Rationalisierung und Automatisier mbH. Device for adjusting the stroke volume of hydraulic units. 3,812,765, Cl. 91-387.000.
Hindermann, Erich A. Screw conveyor. 3,812,956, Cl. 198-213.000.
Hines, Robin H.; Hollinshead, William L.; and Forester, John K., to Laser Systems & Electronics, Inc. Digital distance measuring apparatus employing modulated light beam. 3,813,165, Cl. 356-5.000.
Hirano, Katsuhiko, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument with rhythm selection pulse generator. 3,813,472, Cl. 84-1.030.
Hirata, Hiroshi: *See—*
Higashiyama, Kenji; and Hirata, Hiroshi, 3,813,324.
Hiratake, Susumu: *See—*
Eguchi, Isamu; and Hiratake, Susumu, 3,813,469.
Hitachi, Ltd.: *See—*
Hatsukano, Yoshikazu; Nomiya, Kosei; and Torii, Shuichi, 3,813,564.
Honkawa, Tadashi, 3,813,168.
Kumada, Akio; Ashida, Sakichi; Aizu, Keiichiro; and Koga, Masaahi, 3,813,144.
Matsuda, Youichi; Suzuki, Hiroshi; Shito, Nobuhiko; and Saito, Yosushi, 3,813,631.
Nomiya, Kosei; and Torii, Shuichi, 3,813,563.
Nomiya, Kosei; and Tsuiki, Takao, 3,813,623.
Sakamoto, Yoshio; and Iguchi, Shinsuke, 3,813,606.
Umeda, Jun-Ichi; Aiki, Kunio; Kurata, Kazuhiro; and Kusumoto, Hazime, 3,813,587.
Hitachi Powdered Metals Company: *See—*
Seino, Hiroshi; Suzuno, Shingichi; Takeya, Yoshiaki; Tobita, Tsutomu; and Fukaya, Takeshi, 3,812,565.
Hitz, Hans Rudolf: *See—*
Duerr, Dieter; Hitz, Hans Rudolf; Duennenberger, Max; and Schellenbaum, Max, 3,813,437.
Hix Automation Incorporated: *See—*
Hix, Clifford A.; and Hix, Daniel H., 3,813,270.
Hix, Clifford A.; and Hix, Daniel H., to Hix Automation Incorporated. Heat transfer machine. 3,813,270, Cl. 156-382.000.
Hix, Daniel H.: *See—*
Hix, Clifford A.; and Hix, Daniel H., 3,813,270.
Ho, Shu-Kuang: *See—*
Koplow, Harold Stanley; Eberle, Fritz; Ho, Shu-Kuang; and Lesnick, Edward, 3,812,945.
Hoerbiger Ventilwerke Aktiengesellschaft: *See—*
Bauer, Friedrich, 3,812,880.
Hoffman, Philip A.; and Davey, Frederick K., to Bendix Corporation, The. Wind direction monitor scale converter. 3,812,712, Cl. 73-188.000.
Hoffmann-La Roche Inc.: *See—*
Andrews, Kenneth John Maynard; and Tong, Brian Peter, 3,813,393.
Cohen, Noal; Rosenberger, Michael; and Saucy, Gabriel, 3,813,417.
Osbond, John Mervyn; and Wickens, James Charles, 3,813,427.
Saucy, Gabriel, 3,813,411.
Uskokovic, Milan Radoje; and Williams, Thomas Henry, 3,813,442.
Hofling, Erich; Baur, Rudolf; and Bloeck, Siegfried, to Swiss Aluminium Ltd. Method of treating an aluminum surface. 3,813,303, Cl. 148-6.15r.
Hofmeister, Helmut; Laurent, Henry; Prezewowsky, Klaus; and Wiechert, Rudolf, to Schering Aktiengesellschaft. Process for the preparation of 6-keto-delta 1,3,5,(10) steroids. 3,813,418, Cl. 260-397.400.
Hofstetter, Emil: *See—*
Pfirrmann, Rolf Wilheim; and Hofstetter, Emil, 3,813,387.
Holland Hitch Company: *See—*
Berends, Howard P., 3,813,114.
Holland, Kenneth W., to Eastman Kodak Company. Method and apparatus for forming random slubs in yarn. 3,812,665, Cl. 57-34.00b.
Hollander, Edward F., Jr., to Glass, John P., trading as Cava Industries. Whisker oven and method. 3,813,224, Cl. 23-273.0sp.
Hollinshead, William L.: *See—*
Hines, Robin H.; Hollinshead, William L.; and Forester, John K., 3,813,165.
Hollister, Kenneth Robert; and Perry, Ernest John, to Eastman Kodak Company. Peptizers for photographic emulsions. 3,813,251, Cl. 96-114.000.
Holloman, Charles J., to Trans-Lux Corporation. Display panel. 3,813,673, Cl. 340-373.000.
Hollyhead, William Brian: *See—*
Pioli, Alexander Joseph Peter; Hollyhead, William Brian; and Todd, Peter Frank, 3,813,423.
Holotron Corporation: *See—*
St. John, Daniel S., 3,813,685.
Holze, Ernest P., Jr.; and Culp, Donald R., to Branson Instruments Incorporated. Replaceable welding tip for vibratory welding apparatus. 3,813,006, Cl. 228-1.000.
Honeywell Information Systems, Inc.: *See—*
Borelli, Ronald F., 3,812,780.
Elmer, Ben R.; and Eklund, Melvin H., 3,813,652.
Hunter, John C., 3,813,650.
King, James L., 3,813,032.
King, Richard L.; and Buzby, Wayne R., 3,813,531.
Ryberg, Arlen W., 3,813,592.
Honjo, Satoru; Fukushima, Osamu; and Osada, Chiaki, to Fuji Photo Film Co., Ltd. Process for fixing electrophotographic images. 3,813,267, Cl. 156-236.000.
Honkawa, Tadashi, to Hitachi, Ltd. Two-wavelength spectrophotometer. 3,813,168, Cl. 356-97.000.
Hopkins, Robert Sherman, Jr.: *See—*
Cavett, John Dill; and Hopkins, Robert Sherman, Jr., 3,813,488.
Horsley, William J., to Interspace Corporation. Coupling for plain end pipes. 3,813,116, Cl. 285-236.000.
Hortin, Kenneth L.: *See—*
Fellwock, Charles G.; Hortin, Kenneth L.; and Tillman, Harry L., 3,813,137.
Hortlik, Frantisek: *See—*
Marsalek, Milan; Junek, Jan; Brynda, Vaclav; Burysek, Frantisek; Hortlik, Frantisek; Ripka, Josef; and Lanta, Jiri, 3,812,667.
Horton, Herbert D. Method and apparatus for straightening tubular elements. 3,812,700, Cl. 72-79.000.
Horton, Robert A., to Precision Metalsmiths, Inc. Method for forming ceramic shell molds. 3,812,898, Cl. 164-25.000.
Horvath, William, to Diamond International Corporation. Safety cap. 3,812,989, Cl. 215-9.000.
Hosoe, Kazuya: *See—*
Hasegawa, Goro; Nakamoto, Soichi; and Hosoe, Kazuya, 3,813,679.
Hougen, Gary A.; and Kloc, Henry F., to Continental Can Company, Inc. Latching arrangement for ring pull tab of an easy opening container. 3,813,001, Cl. 220-54.000.
Houma Valve Service, Inc.: *See—*
Soudelier, Morris A., 3,812,722.
Howe, Robert K., to Monsanto Company. Ortho-toluidine plant regulants. 3,813,234, Cl. 71-76.000.
Hruby, Thomas W.: *See—*
Fleischhacker, Joseph F.; and Hruby, Thomas W., 3,812,877.
Hubbell, Harvey, Incorporated: *See—*

Carissimi, Vincent L., 3,813,640.
Hubbs, Kenneth R. Reflective deer warning device. 3,813,143, Cl. 350-97.000.
Hubele, Adolf: *See—*
Emden, Helmut Huber; Hubele, Adolf; and Klahre, Guenter, 3,813,399.
Hubele, Adolf, to Ciba-Geigy AG. Oxime ethers. 3,813,429, Cl. 260-471.00r.
Huber, Josef, to Siemens Aktiengesellschaft. Apparatus and process for distribution of operation demands in a programmed controlled data exchange system. 3,813,648, Cl. 340-174.500.
Huber, Wolfgang; Chow, Silver H.; and Saifer, Mark G., to Diagnostic Data, Inc. Orgotein from red blood cells. 3,813,289, Cl. 195-4.000.
Hubner, Herbert: *See—*
Muller-Schiedmayer, Gunther; Muller, Heinz; Hubner, Herbert; and Ulm, Klaus, 3,813,441.
Hughes Aircraft Company: *See—*
Basiulis, Algerd, 3,813,571.
Grant, Jon Halloran; and Pauly, Raymond W., 3,813,560.
Hughes, Patrick A.; and Russell, David S. Secure data transmission apparatus. 3,813,493, Cl. 179-1.50s.
Hughes, Peter Graham; and Verge, John Pomfret, to Lilly Industries Limited. Certain 5-nitrothiazol-2-yl oxazole and imidazole derivatives. 3,813,401, Cl. 260-302.00h.
Hulls, Leonard Robin, to RCA Corporation. Magnetic reed sensor suitable for use in ignition timing systems. 3,813,596, Cl. 324-16.00r.
Hultsch, Gunther. Coffee making machine with grinding device and centrifuge drum. 3,812,773, Cl. 99-290.000.
Hunicke, Wolfgang: *See—*
Schranz, Karl-Wilhelm; Hunicke, Wolfgang; Brus, Gerhard H.; Schon, Erwin; Busch, Josef; and Bruck, Herbert, 3,813,246.
Hunter, John C., to Honeywell Information Systems, Inc. Method for fabricating and assembling a block-addressable semiconductor mass memory. 3,813,650, Cl. 340-172.500.
Hunter, Robert Tweedy, Jr.; and Marder, Herman Lowell, to Colgate-Palmolive Company. Textile sizing, water and oil repellent composition starch-fluoro polymer. 3,813,359, Cl. 260-17.4st.
Hurco Manufacturing Company, Inc.: *See—*
Roch, Gerald V., 3,812,695.
Hurletron Incorporated: *See—*
Coberley, Daniel A., 3,813,524.
Hurwitz, Mathew. Trolling propeller with self adjusting hydrodynamic spoilers. 3,812,812, Cl. 115-34.00r.
I-T-E Imperial Corporation: *See—*
Clement, Ralph C., 3,813,633.
Icking, Paul: *See—*
Ridder, Hubert; Epping, Winfried; and Icking, Paul, 3,812,823.
Ierymenko, Paul Francis, 254803 Investments Limited. Electric guitar system. 3,813,473, Cl. 84-1.160.
Iguchi, Shinsuke: *See—*
Sakamoto, Yoshio; and Iguchi, Shinsuke, 3,813,606.
Iijima, Tetsuya: *See—*
Mori, Yoichi; Okazaki, Nobuo; Ohtsuka, Kunio; and Iijima, Tetsuya, 3,812,739.
Ikeda, Mitsusuke; Sato, Hisanao; Torii, Etsuko; Morimoto, Kazuhisa; and Hasegawa, Yo, to Matsushita Electric Industrial Co., Ltd. Process for improving a photosensitivity of an electrophotographic element. 3,813,242, Cl. 96-1.00r.
Ilford Limited: *See—*
Ezekiel, Aaron David; Thurston, Elvin Frederick William; Harper, Michael Frederick; and Wood, Malcolm Barlow, 3,813,249.
Illinois Tool Works Inc.: *See—*
Owen, Ronald Charles, 3,813,123.
Saari, Oliver Edward, 3,812,746.
Sygnator, Henry Anton, 3,812,639.
Image Analysing Computers Limited: *See—*
Cowham, Michael John; and Wadlow, David Edward, 3,813,487.
Knowles, William Ralph, 3,813,486.
Imperial Chemical Industries, Limited: *See—*
Pioli, Alexander Joseph Peter; Hollyhead, William Brian; and Todd, Peter Frank, 3,813,423.
Wilson, William, 3,812,668.
Imperial-Eastman Corporation, mesne: *See—*
Kowal, Leonard J., 3,812,704.
Inada, Masami, to Aisin Seiki Kabushiki Kaisha. Antiskid control system. 3,813,130, Cl. 303-21.00f.
Index-Werke KG Hahn & Tessky: *See—*
Wanner, Max; and Schaefer, Erich, 3,812,983.
Indramat-Gesellschaft fur Industrie Rationalisierung und Automatisier mbH: *See—*
Himmler, Conrad R., 3,812,765.
Industrial Knitting, Inc.: *See—*
Mintz, Marcus; and Engelhardt, Bernard H., 3,812,642.
Industrial Plastic Specialties Company: *See—*
Friesner, Charles E., 3,813,199.
Industrial Science & Technology, Agency of: *See—*
Tarui, Yasuo; Komiya, Yoshio; and Harada, Yasoo, 3,813,585.
Industrie Pirelli Societa per Azioni: *See—*
Priaroggia, Paolo Gazzana, 3,813,476.
Sarracino, Marcello, 3,812,666.
Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft: *See—*
Miller, Harry B., 3,813,051.
Industrie-Werke Karlsruhe Augsbury Aktiengesellschaft: *See—*
Miller, Harry B., 3,813,020.
Institut de Recherches de la Siderurgie Francaise (IRSID): *See—*
Boillot, Pierre, 3,812,705.
Instituut Voor Bewaring en Verwerking Van Landbouxprodukten: *See—*
Sijbring, Pieter Herman, 3,812,775.
International Business Machines Corporation: *See—*
Arps, Ronald Barthold, 3,813,485.
Bakos, Peter; and Knight, Diana J., 3,813,309.
Brock, George W.; and Shelledy, Frank B., 3,813,692.
Chang, Ifay F.; and Dreyfus, Russell W., 3,813,554.
Chaudhari, Praveen, 3,813,241.
DiStefano, Thomas H.; Laibowitz, Robert B.; and Rosenberg, Robert, 3,813,549.
Krick, Paul John; and Pleshko, Peter, 3,813,558.
Kudsi, Bader S.; and Mahurin, Ballard Terry, 3,813,516.
Rosenberg, Robert, 3,813,263.
Vora, Madhukar B.; and Wu, Leon L., 3,813,513.
Wolfe, Bruce A., 3,813,676.
International Nickel Company, Inc., The: *See—*
Flint, George Norman; Evans, Thomas Ernest; and Hart, Anthony Christopher, 3,813,239.
International Paper Company, mesne: *See—*
Gilbert, John W.; and Panagrossi, Ahmed, 3,812,860.
International Standard Electric Corporation: *See—*
Olivero, Oliviero, 3,813,479.
Ramsay, Melvin Murray; Barnes, William Geddes; and Bedgood, Michael Albert, 3,813,489.
International Telephone and Telegraph Corporation: *See—*
Anderson, Ronald Vernon, 3,813,504.
Conerly, Howard Jeffery, 3,813,495.
Cooper, James Joseph, Jr.; and Schurter, Gary Lee, 3,813,635.
Mears, James William, 3,812,914.
Schurter, Gary Lee; and DeLuca, Carlo Bruno, 3,813,639.
Terrell, Melvin Leon, 3,812,879.
International Telephone and Telegraph Industries, Inc.: *See—*
Winter, Klaus, 3,813,187.
Interspace Corporation: *See—*
Horsley, William J., 3,813,116.
Intertherm, Inc.: *See—*
Stock, Edwin Henry, 3,812,698.
Investments Limited: *See—*
Ierymenko, Paul Francis, 3,813,473.
Ippolito, Anthony C., to Wurlitzer Company, The. Electronic musical instrument circuit. 3,813,474, Cl. 84-1.170.
Isaacson, Leland H. Urethra magnetic valve structure. 3,812,841, Cl. 128-1.00r.
Isensee, Klaus-Staffen: *See—*
Haas, Werner; and Isensee, Klaus-Staffen, 3,812,890.
Ishida, Shuichi: *See—*
Abe, Yasunori; Yamane, Nobuo; Itoh, Kensaku; Ishida, Shuichi; and Kobayashi, Hisabumi, 3,813,444.
Ito, Ikoh; Sekihara, Takeshi; and Emura, Tomoyuki, to Sumitomo Chemical Company, Ltd. Method for producing high bulk density polyvinyl chloride. 3,813,373, Cl. 260-92.80w.
Itoh, Kensaku: *See—*
Abe, Yasunori; Yamane, Nobuo; Itoh, Kensaku; Ishida, Shuichi; and Kobayashi, Hisabumi, 3,813,444.
Itokawa, Hideji, to Funakoshi Pharmaceutical Co., Ltd. Chromatogram reading instrument. 3,812,586, Cl. 33-1.00c.
Iwata, Motoji: *See—*
Kurata, Yutaka; and Iwata, Motoji, 3,812,965.
Iwatana & Co., Ltd.: *See—*
Nagata, Tadayoshi; and Hamanaka, Wahei, 3,812,796.
I.W.S. Nominee Company Limited: *See—*
Benisek, Ladislav; Winterbottom, Kenneth; Shaw, Trevor; and Edmondson, Gerald Keith, 3,813,220.
Jackson, Byron, Inc.: *See—*
Barron, Charles D., 3,812,723.
Jackson, William B. Portable knockdown oven. 3,812,836, Cl. 126-9.00r.
Jacobs, Richard L., to Sherwin-Williams Company, The. Production of trifluoromethylnitrophenols and related compounds. 3,813,446, Cl. 260-622.00r.
Jaegers, Leopold, to Trennjaeger Maschinen-and Sagelfabrik. Saw for cold metals. 3,812,752, Cl. 83-478.000.
Jaeken, Jan: *See—*
Mannens, Marc Godfried; Jaeken, Jan; Janssens, Wilhelmus; and Priem, Jan Jozef, 3,813,255.
Jamison, Saunders Eliot, to Celanese Corporation. Method of coating soil with an agricultural mulch. 3,812,615, Cl. 47-9.000.
Jan Verstegen, Judicus Marinus Pieter; and De Meester, Emiel Petrus Juliaan, to U.S. Philips Corporation. Luminescent screen and mercury vapor discharge lamp containing same. 3,813,569, Cl. 313-108.00r.
Janson, Sven Olof. Safety device for sauna rooms. 3,813,628, Cl. 337-322.000.
Janssens, Wilhelmus: *See—*
Mannens, Marc Godfried; Jaeken, Jan; Janssens, Wilhelmus; and Priem, Jan Jozef, 3,813,255.
Japan Storage Battery Co., Ltd.: *See—*
Shima, Shunji; Kadowaki, Hideyoshi; Muto, Eiji; Okazaki, Ichiro; and Matsumura, Koichi, 3,813,300.
Jarvis, Edward D.: *See—*
Dyer, Clarence H.; Gaunt, Conrad L.; and Jarvis, Edward D., 3,813,294.

Jasinski, Stanley C.; Wenstrup, Leo J.; and Duffty, Bryant, to Eaton Yale ltd. Tree harvester and method. 3,812,892, Cl. 144-309.0ac.
Jaworski, Eugene: *See—*
Glass, Marvin I.; Breslow, Jeffrey D.; and Jaworski, Eugene, 3,812,613.
Jayne, Gerald John Joseph: *See—*
Elliott, John Scotchford; Jayne, Gerald John Joseph; Crook, Monty Frederick; and Harrington, Colin John, 3,813,341.
Jefferson, Raymond. Aerofoil assembly. 3,813,059, Cl. 244-12.00c.
Jeltrup, Eric H.: *See—*
Beer, Emanuel E.; and Jeltrup, Eric H., 3,813,556.
Jensen, Donald E.: *See—*
Draughon, Roland C.; Jensen, Paul D.; and Jensen, Donald E., 3,813,076.
Jensen, Ellsworth O.: *See—*
Shelton, Ray T.; and Jensen, Ellsworth O., 3,813,262.
Jensen, Paul D.: *See—*
Draughon, Roland C.; Jensen, Paul D.; and Jensen, Donald E., 3,813,076.
Jochim, Friedrich; Peetz, Dieter; Karla, Heinz; and Luerssen, Hermann, to Compagnie de Saint-Gobain. Electrically heated glass window. 3,813,519, Cl. 219-522.000.
Joh, Yasushi; and Sugimori, Teruhiko, to Mitsubishi Rayon Company Limited. Method of manufacturing acrylonitrile polymers having an excellent whiteness. 3,813,372, Cl. 260-88.70r.
Johansen, Harold R.: *See—*
Schriever, Richard L.; Johansen, Harold R.; and Sandy, Richard E., 3,813,612.
Johns-Manville Corporation: *See—*
French, David Walter, 3,813,115.
Olszyk, Bernard John; and Fricklas, Richard Leon, 3,813,280.
Johnson, Edgar G., Jr.; and Cornelison, James J. Light filter unit having snap-action device for shifting filter means into and out of operative position. 3,813,167, Cl. 356-74.000.
Johnson, Kenneth P. Thermal refrigeration process and apparatus. 3,812,682, Cl. 62-6.000.
Johnson, Ralph B., to Texas Instruments, Incorporated. Image rotation device for an infrared scanning system or the like. 3,813,552, Cl. 250-347.000.
Johnson Service Company: *See—*
Laakaniemi, Richard N.; and Stahl, Robert R., 3,812,873.
Johnston, David K.: *See—*
Temple, William F.; and Johnston, David K., 3,813,184.
Johnston, James Meill: *See—*
Allen, Howard John Brandsom; and Johnston, James Meill, 3,813,655.
Jolliff, Norman E.: *See—*
Von Kaler, Roland L.; and Jolliff, Norman E., 3,812,735.
Jones, Alan; and Bustard, John Shaw, to Parson, Les, & Sons (Engineers) Limited. Article conveying apparatus. 3,812,952, Cl. 198-57.000.
Jones, Cecil Roy: *See—*
Goldman, Arthur J.; Rowe, D. Garth; and Jones, Cecil Roy, 3,813,286.
Jones, Charles; and Raye, Alexander H., to Curtiss-Wright Corporation. Apparatus for processing the trochoidal housing surfaces of rotary piston mechanisms. 3,812,574, Cl. 29-560.000.
Jones, J. A., Construction Company: *See—*
Roland, David H.; and Hastings, Edward D., 3,812,978.
Roland, David H., 3,813,124.
Jones, Lawrence R.: *See—*
Feucht, Robert H.; and Jones, Lawrence R., 3,813,313.
Jorneskog, Karl Oskar Inge, to Elektriska Svetsnings AB. Furnace plant for the drying or baking of coated arc welding rods. 3,813,213, Cl. 432-121.000.
Joseph, Raymond, to Ateliers Reunis Societe Anonyme. Crate. 3,812,999, Cl. 220-41.000.
Joshi, Vishnuprakash, to Licentia Patent-Verwaltungs-G.m.b.H. Method of manufacturing a barrier layer field effect transistor. 3,813,291, Cl. 117-212.000.
Joslyn Mfg. and Supply Co.: *See—*
Kawiecki, Chester J., 3,813,577.
Juelke, Charles V.; and Trapasso, Louis E., to Celanese Corporation. Flame-retardant polyesters. 3,813,454, Cl. 260-873.000.
Juhasz, Charles, to Carborundum Company, The. Differential pressure indicator with internal reset. 3,812,816, Cl. 116-70.000.
Junek, Jan: *See—*
Marsalek, Milan; Junek, Jan; Brynda, Vaclav; Burysek, Frantisek; Hortlik, Frantisek; Ripka, Josef; and Lanta, Jiri, 3,812,667.
Kabel- und Metallwerke Gutehoffnungschutte Aktiengesellschaft: *See—*
Prinzhorn, Klaus, 3,812,578.
Kabushiki Kaisha Komatsu Seisakusho: *See—*
Kawamura, Ryohei, 3,812,927.
Nagata, Yoshihiro; Yoda, Tadashi; and Tanaka, Yoshinobu, 3,812,804.
Kabushiki Kaisha Suwa Seikosha: *See—*
Tomita, Chuji; Kasai, Kazutomo; and Okonogi, Itaru, 3,813,227.
Kadowaki, Hideyoshi: *See—*
Shima, Shunji; Kadowaki, Hideyoshi; Muto, Eiji; Okazaki, Ichiro; and Matsumura, Koichi, 3,813,300.
Kaestner, Paul T. Device for determining position and focus of an optical member. 3,813,169, Cl. 356-127.000.
Kahn, Samuel, to Universal Oil Products Company. Preparation of coumarin. 3,813,414, Cl. 260-343.20r.
Kaiser, Steven A., to Chore-Time Equipment, Inc. Ventilator. 3,812,772, Cl. 98-110.000.
Kaletin, Vladislav Mikhailovich; and Morokin, Anatoly Afonasievich. Car conveyer. 3,812,954, Cl. 198-138.000.
Kamachi, Hajime: *See—*
Naito, Takayuki; Okumura, Jun; and Kamachi, Hajime, 3,813,391.
Kaman Aerospace Corporation: *See—*
Bossler, Robert B., Jr., 3,812,758.
Kamata, Tokumaro: *See—*
Katagiri, Keizo; Sakaguchi, Mamoru; and Kamata, Tokumaro, 3,813,278.
Kamikawa, Kousaku; and Kawabe, Seikichi, to Chubu Kikai Co., Ltd. and Nisseki Plastic Chemical Co., Ltd., The. Method for packaging flowable materials and apparatus for manufacturing packaging bags. 3,812,644, Cl. 53-29.000.
Kamiya, Takashi: *See—*
Tensho, Akira; Kamiya, Takashi; Yoshihisa, Saito; Hashimoto, Masashi; and Hideo, Seki, 3,813,394.
Kamo, Mitsunori, to Mitsubishi Pencil Co., Ltd. Ever-sharp pencil. 3,813,176, Cl. 401-94.000.
Kamogawa, Yoshiro; and Tuchiya, Takao, to Nippon Steel Corporation. Automated steel section rolling control system and method for operating same. 3,812,693, Cl. 72-13.000.
Kamoi, Arao: *See—*
Kawaguchi, Kiyoshi; Miyamatsu, Yasunori; Kamoi, Arao; and Fukuda, Kinya, 3,812,697.
Miyamatsu, Yasunori; Kamoi, Arao; and Fukuda, Kinya, 3,812,701.
Kanda, Shozo: *See—*
Sakumoto, Hideki; Namoto, Yoshiteru; Ushihara, Masaharu; Tanigawa, Shizuhiko; and Kanda, Shozo, 3,813,057.
Karla, Heinz: *See—*
Jochim, Friedrich; Peetz, Dieter; Karla, Heinz; and Luerssen, Hermann, 3,813,519.
Karlsson, Stig Ingvar, to AB Svensk Varmematning C.B-System. Method and apparatus for measuring thermal properties of a flowing medium. 3,812,713, Cl. 73-193.00r.
Karol, Frederick J., to Union Carbide Corporation. Ethylene polymerization with ammonia modified catalyst. 3,813,381, Cl. 260-88.20r.
Kasai, Kazutomo: *See—*
Tomita, Chuji; Kasai, Kazutomo; and Okonogi, Itaru, 3,813,227.
Katagiri, Keizo; Sakaguchi, Mamoru; and Kamata, Tokumaro, to Nippon Kakoh Seiski K.K. Self-sticking material and a process for producing the same. 3,813,278, Cl. 161-82.000.
Katto, Takayuki: *See—*
Murayama, Naohiro; Katto Takayuki; and Funabashi, Shinichiro, 3,813,461.
Katz, Alex J.; and Caldwell, Robert J., to Mohasco Industries, Inc. Chair with backrest movable up and down and hardware therefor. 3,813,150, Cl. 297-353.000.
Katz, Otto, to Faber-Castell, A. W. Mechanical pencil. 3,813,175, Cl. 401-65.000.
Kaufman, Raimund: *See—*
Franzen, G.; Hillenkamp, Franz; Kaufman, Raimund; and Remy, Ernst, 3,813,544.
Kawabe, Seikichi: *See—*
Kamikawa, Kousaku; and Kawabe, Seikichi, 3,812,644.
Kawaguchi, Kiyoshi; Miyamatsu, Yasunori; Kamoi, Arao; and Fukuda, Kinya, to Toyo Kohan Co., Ltd. Method and an apparatus of leveling a metal strip. 3,812,697, Cl. 72-60.000.
Kawaguchi, Yasuharu: *See—*
Aramaki, Kuninori; Kawakami, Hiroshi; and Kawaguchi, Yasuharu, 3,812,968.
Kawakami, Hiroshi: *See—*
Aramaki, Kuninori; Kawakami, Hiroshi; and Kawaguchi, Yasuharu, 3,812,968.
Kawakami, Koichi, to Yoshida Kogyo Kabushiki Kaisha. Apparatus for producing fastener-element-free gaps in a continuous slider fastener chain. 3,812,754, Cl. 83-622.000.
Kawakita, Chihiro: *See—*
Yokokawa, Toshiki; and Kawakita, Chihiro, 3,813,508.
Kawamura, Ryohei, to Kabushiki Kaisha Komatsu Seisakusho. Endless track type tractor. 3,812,927, Cl. 180-54.00a.
Kawasaki Jukogyo Kabushiki Kaisha: *See—*
Sugimoto, Takao; and Takagi, Izumi, 3,812,731.
Kawiecki, Chester J., to Joslyn Mfg. and Supply Co. Overvoltage protection apparatus having fusible ring and short circuit means operated thereby. 3,813,577, Cl. 317-16.000.
Kean, George W. Cage-type rotary spit. 3,812,776, Cl. 99-421.00h.
Keastle, Berthold, to BRS, Inc. Sport shoe with interchangeable gripping elements. 3,812,605, Cl. 36-67.00d.
Keating, Francis J. Guarded finger nail clippers. 3,812,868, Cl. 312-75.400.
Keating, Francis J. Emergency pump system powered by lawnmower. 3,813,190, Cl. 417-236.000.
Kehr, Clifton L.: *See—*
Wood, Louis L.; Kehr, Clifton L.; and Frisch, Kurt C., 3,812,618.
Keijzer, Johan H.: *See—*
Fader, John H.; Keijzer, Johan H.; Graulus, Marcel J. R.; and Beets, Roland H. C., 3,812,938.

Keith, Gareth Allan: *See—*
Baumann, Hans D.; and Keith, Gareth Allan, 3,813,079.

Keller, Michael P.: *See—*
Michaels, Alan S.; Buckles, Richard G.; and Keller, Michael P., 3,812,854.

Kelly, Donald V. Sliding window lock. 3,813,120, Cl. 292-251.000.

Kelly, Ralph; and Ritter, Edmond Jean, to Cincinnati Milacron Inc. Mildness additive. 3,813,350, Cl. 252-547.000.

Kelsey-Hayes Company: *See—*
Doerfler, Roger E., 3,812,678.

Kemnitz, Robert H.; and Pollak, Robert J., to Allis-Chalmers Corporation. Gyratory crusher with capacity regulator. 3,813,046, Cl. 241-202.000.

Kempkes, Helmut. Vehicle equipped with a floodlight installation. 3,813,536, Cl. 240-67.000.

Kendall Company, The: *See—*
Marshall, Preston F.; and Silvi, James J., 3,812,553.

Kendrick, Lucian A., Jr., to Tennessee Valley Authority. Production of suspension fertilizers from wet-process orthophosphoric acids. 3,813,233, Cl. 71-34.000.

Keneko, Kozo: *See—*
Miyajima, Nobuo; Keneko, Kozo; Ohnuki, Iwao; and Noboru, Okubo, 3,813,088.

Kerr, Edward R.: *See—*
Bertling, Rudolph B.; and Kerr, Edward R., 3,812,647.

Kerst, Al F., to Gates Rubber Company, The. Process for preparing amino-substituted phosphonates. 3,813,456, Cl. 260-968.000.

Kerwin, Daniel, to Meyercord Co., The. Machine and method for applying indicia to articles. 3,813,268, Cl. 156-238.000.

Kesselring, Fritz, to Siemens Aktiengesellschaft. Synchronous puffer circuit breaker. 3,813,507, Cl. 200-148.00a.

Ketterer, Stanley J., to Singer Company, The. Electromechanical disc adder mechanisms. 3,812,729, Cl. 74-56.000.

Kheifets, Georgy Naumovich: *See—*
Rogalsky, Anatoly Viktorovich; Markevich, Vitaly Mikhailovich; Kheifets, Georgy Naumovich; Zaichenko, Jury Leonidovich; Baburov, Valery Efremovich; Pavlovsky, Vladimir Petrovich; Golban, Eduard Vasilievich; Pechennik, Leonid Naumovich; Knyazhinsky, Zakhar sipovich; Bogatov, Nikolai Alexandrovich; Raichuk, Jury Isaakovich; Zaritsky, Vaktor Nikolaevich; and Grodzitsky, Evgeny Fedorovich, 3,812,909.

Kidde, Walter, & Company, Inc.: *See—*
Saunders, Leonard Thomas, 3,813,669.

Kiejzik, Paul A. Micro-film jacket-notching device. 3,812,753, Cl. 83-522.000.

Kikuchi, Makoto; Asano, Hiroaki; Otsu, Ikuo; and Saeki, Toyoaki, to Toyoda Koki Kabushiki Kaisha. Internal grinding machine. 3,812,623, Cl. 51-5.00d.

Kimura, Masahiro. Phase-locked loop in which frequency divider ratios are altered to obtain rapid lock-in. 3,813,610, Cl. 331-1.00a.

Kindl, Bruno: *See—*
delle Porta, Paolo; Giorgi, Tiziano; Kindl, Bruno; and Zucchinelli, Mario, 3,813,266.

King, James L., to Honeywell Information Systems Inc. Method for testing MOS memory store device. 3,813,032, Cl. 235-153.0ac.

King, Richard L.; and Buzby, Wayne R., to Honeywell Information Systems, Inc. Diagnostic checking apparatus. 3,813,531, Cl. 235-153.0ak.

King, Robert W., to Copeland Corporation. Induction system for rotary mechanism. 3,813,195, Cl. 418-86.000.

Kinkade, William A.; and Roe, Clyde B. Process for making gypsum board. 3,813,312, Cl. 156-39.000.

Kinnear, Joseph D. Cable connector. 3,813,638, Cl. 339-64.00r.

Kinsella, Howard R., to Emerson Electric Co. Electromagnet with detachable casting and nonrotatable armature. 3,813,625, Cl. 335-263.000.

Kinzie, James E.: *See—*
Cone, George W.; and Kinzie, James E., 3,813,533.

Kirchberger, Walter Carl, to Globe-Union Inc. Battery assembly machine. 3,813,024, Cl. 228-58.000.

Kirvalidze, Nikolai Spiridonovich: *See—*
Drobich, Oleg Pavlovich; Pritomanov, Alexei Evgenievich; Rokutov, Viktor Petrovich; Kirvalidze, Nikolai Spiridonovich; Gerzmava, Dusheli Vladimirovich; and Mandzjuk, Boris Valentinovich, 3,813,335.

Kirwan, George B.: *See—*
Hackney, Thomas P., Jr.; and Kirwan, George B., 3,813,117.

Kitajima, Nobuo; Masaki, Tatsuo; and Kondo, Hideyo, to Canon Kabushiki Kaisha. Electrophotographic photosensitive member. 3,813,243, Cl. 96-1.500.

Kitterman, Richard E.; and Giles, Grady E., to Hersey Products, Inc., mesne. Counter and preset unit. 3,813,525, Cl. 235-92.0pe.

Kivlen, John A.; Orr, Richard L.; Chwab, William H.; and Macindoe, George F., to Ashland Company of N. J., Inc. Harvesting apparatus. 3,812,663, Cl. 56-328.000.

Klahre, Guenter: *See—*
Emden, Helmut Huber; Hubele, Adolf; and Klahre, Guenter, 3,813,399.

Klappert, Willi, to General Electric Company. Crimp locked outer turn for induction core. 3,812,554, Cl. 24-20.0ee.

Kleiman, Isaac Noe. Christmas tree. 3,813,277, Cl. 161-24.000.

Kleine, Jean Jacques, to Du Pont, S. T. Apparatus for storing a liquid for its distribution in the gaseous state. 3,813,041, Cl. 239-55.000.

Kling, Georg, to Pohlig-Heckel-Bleichert Vereinigte Maschinenfabriken Aktiengesellschaft. Conveyor comprising a plurality of drive means for successively driving a load carrier. 3,812,787, Cl. 104-96.000.

Klingspor, Christian Staffansson, to Aktiebolaget Electrolux. Cord-winding structure for mobile electrical appliance. 3,813,054, Cl. 242-86.50r.

Kloc, Henry F.: *See—*
Hougen, Gary A.; and Kloc, Henry F., 3,813,001.

Klocke, Hans Joachim; Stockburger, Dieter; Gierth, Volker; and Zeitler, Gerhard, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Making powders of ethylene polymers. 3,813,375, Cl. 260-94.9ed.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
Langmaack, Jurgen; and Haas, Helmut, 3,813,084.

Knapp, Walter: *See—*
Zahn, Wolfgang; Fergg, Berthold; and Knapp, Walter, 3,813,158.

Knell, Bernhard: *See—*
Bollig, Georg; Grothe, Horst; Knell, Bernhard; Thalmann, Armin; and Zeller, Josef, 3,812,900.

Kneusel, Raymond H. P.; and Potts, Vinson S., to Crown Cork & Seal Company, Inc. Method of and apparatus for forming container bodies. 3,812,696, Cl. 72-57.000.

Knight, Diana J.: *See—*
Bakos, Peter; and Knight, Diana J., 3,813,309.

Knippenberg, Wilhelmus Franciscus; and Verspui, Gerrit, to U.S. Philips Corporation. Method of producing crystalline silicon carbide whiskers. 3,813,340, Cl. 252-62.30c.

Knockeart, Ronald P., to Bendix Corporation, The. Rotating prism scanning system having range compensation. 3,813,140, Cl. 350-7.000.

Knott, James M., to Coatings Engineering Corporation. Method and apparatus for packaging wire mesh material. 3,812,640, Cl. 53-14.000.

Knowles, William Ralph, to Image Analysing Computers Limited. Image analysis. 3,813,486, Cl. 178-7.100.

Knox, Walter R.: *See—*
Paulik, Frank E.; Hershman, Arnold; Knox, Walter R.; and Roth, James F., 3,813,428.

Knyazhinsky, Zakhar Osipovich: *See—*
Rogalsky, Anatoly Viktorovich; Markevich, Vitaly Mikhailovich; Kheifets, Georgy Naumovich; Zaichenko, Jury Leonidovich; Baburov, Valery Efremovich; Pavlovsky, Vladimir Petrovich; Golban, Eduard Vasilievich; Pechennik, Leonid Naumovich; Knyazhinsky, Zakhar sipovich; Bogatov, Nikolai Alexandrovich; Raichuk, Jury Isaakovich; Zaritsky, Vaktor Nikolaevich; and Grodzitsky, Evgeny Fedorovich, 3,812,909.

Kobayashi, Hisabumi: *See—*
Abe, Yasunori; Yamane, Nobuo; Itoh, Kensaku; Ishida, Shuichi; and Kobayashi, Hisabumi, 3,813,444.

Kobayashi, Yugoro, to Ricoh Co., Ltd. Copying machine of the penetration printing type. 3,813,163, Cl. 355-109.000.

Kobosko, Anna: *See—*
Kycia, Henryk; Chmielewska, Danuta; Rolak, Hanna; Michno, Zbigniew; Zaniuk, Jan; Surgiewicz, Janusz; Stefaniak, Ferdynand; Lenkowski, Przemyslaw; and Kobosko, Anna, 3,813,415.

Koch, Robert E., to General Electric Company. Current limiting fuse having improved low current interrupting capability. 3,813,627, Cl. 337-274.000.

Koegel, James H.: *See—*
Merrell, Kenneth C.; Scott, Timothy F.; Brushwyler, Gordon R.; Koegel, James H.; and Poindexter, William E., 3,813,325.

Koei Chemical Co., Ltd.: *See—*
Wada, Yasuo; and Watanabe, Nanao, 3,813,406.

Koga, Masaahi: *See—*
Kumada, Akio; Ashida, Sakichi; Aizu, Keiichiro; and Koga, Masaahi, 3,813,144.

Kohjin Co., Ltd.: *See—*
Oshima, Akira; Tsuboshima, Kazuhiko; and Takahashi, Nobuhito, 3,813,438.

Kokx, Darrel Dayfield: *See—*
Duncan, Robert Campbell; and Kokx, Darrel Dayfield, 3,812,856.

Koland, David G.: *See—*
Westergren, George A.; Koland, David G.; and Eggert, Thomas F., 3,812,659.

Kolb, John P.; and Powell, Richard G., to ACF Industries, Incorporated. Valve means for railway car trainline. 3,812,980, Cl. 213-76.000.

Kolic, Edwin S. Hose clamp. 3,813,077, Cl. 251-9.000.

Koll, Stanley J.: *See—*
Wolf, Edward M.; and Koll, Stanley J., 3,812,992.

Kollitz, Gerhard. Apparatus for cleaning and massaging. 3,812,848, Cl. 128-36.000.

Kollmorgen Corporation: *See—*
Walker, Richard A.; and Weisner, Ralph M., 3,813,172.

Kolozsi, William A.: *See—*
Skowron, Carl S.; and Kolozsi, William A., 3,813,164.

Komai, Saburo: *See—*
Wada, Takeo; and Komai, Saburo, 3,813,346.

Komiya, Yoshio: *See—*
Tarui, Yasuo; Komiya, Yoshio; and Harada, Yasoo, 3,813,585.

Kommaditobolaget United Sterling (Sweden) AB & Co.: *See—*
Greis, Ingemar Joel, 3,812,677.

Kondo, Hideyo: *See—*
Kitajima, Nobuo; Masaki, Tatsuo; and Kondo, Hideyo, 3,813,243.

Konvalin, Robert L. Body restraint. 3,812,852, Cl. 128-134.000.
Koost, Oliver Augustovich; and Bezzubov, Kheino Ioanovich. Working head of a rotary swaging machine. 3,812,699, Cl. 72-76.000.
Koplow, Harold Stanley; Eberle, Fritz; Ho, Shu-Kuang; and Lesnick, Edward, to Wang Laboratories, Inc. Typewriter system. 3,812,945, Cl. 197-19.000.
Kopp, Georg, to SIG Schweizerische Industrie-Gesellschaft. Pusher device for attachment to a chain conveyor. 3,812,955, Cl. 198-170.000.
Korotkov, Mikhail Mikhailovich; Suldin, Stanislav Mikolaevich; and Vasin, Alexandr Ivanovich. Automatic stabilization system for hydrofoil craft. 3,812,806, Cl. 114-66.50h.
Koshaev, Alexei Petrovich. Gear-cutting machine. 3,812,762, Cl. 90-10.000.
Kotuby, Paul M.; and Velicka, Alvydas, to Risdon Manufacturing Company, The. Aerosol metering valve. 3,813,013, Cl. 222-402.200.
Koval, Leonide P., to General Electric Company. Current-limiting circuit breaker. 3,813,619, Cl. 335-16.000.
Kowal, Leonard J., to Imperial-Eastman Corporation, mesne. Apparatus for making up an expandable insert fitting. 3,812,704, Cl. 72-392.000.
Koziol, Leonard L. Portable greenhouse. 3,812,616, Cl. 47-17.000.
Kral, Fred G., to Bell & Howell Company. Control sensor. 3,813,521, Cl. 235-61.11d.
Kramer, George C., to Branson Instruments, Incorporated. Electronic safety control curcuit. 3,813,021, Cl. 228-1.000.
Kranz, Jeremiah J. Choke means. 3,812,610, Cl. 42-79.000.
Kraus, Henry. Adjustable back support. 3,813,148, Cl. 297-231.000.
Krauth, Axel; and Muller, Norbert, to Nuken, G.m.b.H. Nuclear fuel tablet containing uranium carbide, plutonium carbide and plutonium nitride, sulfide or phosphide. 3,813,344, Cl. 252-301.10r.
Krick, Paul John; and Pleshko, Peter, to International Business Machines Corporation. Directional, non-volatile bistable resistor logic circuits. 3,813,558, Cl. 307-221.00r.
Krieter, Horst, to Westinghouse Bremsen- und Apparatebau. Apparatus for controlling the quantity of flow in a fluid medium. 3,812,876, Cl. 137-501.000.
Kritbruksbolaget i Malmo AB: *See*—
Stern, Leif Einar, 3,812,973.
Kudsi, Bader S.; and Mahurin, Ballard Terry, to International Business Machines Corporation. Apparatus for temperature control for a heated rotating cylinder. 3,813,516, Cl. 219-471.000.
Kuenzel, Robert R. Safety attachment. 3,812,815, Cl. 116-28.00r.
Kufner, Kenneth L.; Pellegrino, Thomas P.; and Chmela, Frank P., to Molex Incorporated. Method and apparatus for mounting terminal pins. 3,812,569, Cl. 29-203.00b.
Kumada, Akio; Ashida, Sakichi; Aizu, Keiichiro; and Koga, Masaahi, to Hitachi, Ltd. Method and device for color modulation. 3,813,144, Cl. 350-150.000.
Kumanogo, Tadaki: *See*—
Miki, Yasuhiro; and Kumanogo, Tadaki, 3,813,284.
Kurata, Kazuhiro: *See*—
Umeda, Jun-Ichi; Aiki, Kunio; Kurata, Kazuhiro; and Kusumoto, Hazime, 3,813,587.
Kurata, Yutaka; and Iwata, Motoji, to Nippon Gakki Seizo Kabushiki Kaisha. Method for automatically sorting block-type objects of different categories and apparatus therefor. 3,812,965, Cl. 209-74.00m.
Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Hayashi, Yasuo; and Adachi, Yoshiaki, 3,813,424.
Murayama, Naohiro; Katto, Takayuki; and Funabashi, Shinichiro, 3,813,461.
Kurosawa, Koichi; and Okubo, Ko, to Anritsu Electric Co., Ltd. Facsimile system. 3,813,483, Cl. 178-6.000.
Kusumoto, Hazime: *See*—
Umeda, Jun-Ichi; Aiki, Kunio; Kurata, Kazuhiro; and Kusumoto, Hazime, 3,813,587.
Kycia, Henryk; Chmielewska, Danuta; Rolak, Hanna; Michno, Zbigniew; Zaniuk, Jan; Surgiewicz, Janusz; Stefaniak, Ferdynand; Lenkowski, Przemyslaw; and Kobosko, Anna, to Grodziskie Zaklady Farmaceutyczne "Polfa" Przedsiebiorstwo Panstwowe. Process for the reparation of 3-(beta dialkylamino-ethyl)-4-alkyl-7-carboethoxymethoxycoumarins. 3,813,415, Cl. 260-343.20r.
Kysor Industrial Corporation: *See*—
Brown, Grant M., 3,812,684.
La Belle, Clayton J. Collapsible pallet for freight and cargo. 3,812,792, Cl. 108-56.000.
La Mar Laboratories, Inc.: *See*—
La Vietes, J. R., 3,813,222.
La Vietes, J. R., to La Mar Laboratories, Inc. Method of determining ovulation time in urine and fertility in females. 3,813,222, Cl. 23-230.00b.
Laakaniemi, Richard N.; and Stahl, Robert R., to Johnson Service Company. Fluid signal limiting device. 3,812,873, Cl. 137-84.000.
Lacroix, Armand Jean-Baptiste: *See*—
Bouiller, Jean Georges; Gobin, Michel Roland; Lacroix, Armand Jean-Baptiste; and Bauger, Louis Jules, 3,813,185.
Lagnston, Earl M., to Tokeim Corporation. Liquid dispenser with electronic computing and display system. 3,813,527, Cl. 235-151.340.
Laibowitz, Robert B.: *See*—
DiStefano, Thomas H.; Laibowitz, Robert B.; and Rosenberg, Robert, 3,813,549.
Laing, John, and Son Limited: *See*—
Lowen, Michael David; and Newby, Ronald, 3,812,749.
Laird, John E., to Products Research & Chemical Corporation. Air powered sealant dispenser including flexible tubular conduits as valve means. 3,813,012, Cl. 222-326.000.
Laliberte, Carolyn Doris: *See*—
McAnespie, Donald; and Laliberte, Robert Justin, 3,813,019.
Laliberte, Robert Justin: *See*—
McAnespie, Donald; and Laliberte, Robert Justin, 3,813,019.
Lampinen, Leo Kalevi. Air pollution device. 3,812,657, Cl. 55-223.000.
Lanahan, John H., to Dyna Logics, Inc. Adjustable toilet tank flush valve. 3,812,545, Cl. 4-67.00a.
Lancaster Colony Corporation: *See*—
Brody, Ernest O., 3,812,617.
Landis Tool Company: *See*—
Gebel, Kurt M.; and Price, Ralph E., 3,812,627.
Landwehrkamp, Hans, to Schubert & Salzer Maschinenfabrik Aktiengesellschaft. Apparatus for continuously winding thread onto bobbins. 3,813,050, Cl. 242-18.00a.
Lange, Raymond J.: *See*—
Clemens, David H.; and Lange, Raymond J., 3,813,353.
Langmaack, Jurgen; and Haas, Helmut, to Klockner-Humboldt-Deutz Aktiengesellschaft. Vibrating device with a heat insulated treatment chamber, particularly a vibrating mill. 3,813,084, Cl. 259-72.000.
Langston, Benny: *See*—
Salmon, David; Weirzbicke, Edward J.; Langston, Benny; and Beegle, Donald W., 3,813,238.
Lanta, Jiri: *See*—
Marsalek, Milan; Junek, Jan; Brynda, Vaclav; Burysek, Frantisek; Hortlik, Frantisek; Ripka, Josef; and Lanta, Jiri, 3,812,667.
Lapierre, Philippe D.: *See*—
Lefebvre, Michel S. M.; and Lapierre, Philippe D., 3,812,598.
Laridon, Urbain Leopold; and Van Den Houte, Jozef Willy, to Agfa-Gevaert N.V. Photochromic composition containing polyhalogenated compound, spiropyran compound and sensitizer and the use thereof. 3,813,245, Cl. 96-48.00r.
Larson, Raymond B.; and Wogoman, Frank W., to Wells Electronics, Inc. Method for forming electrical joints between intermediate parts of an elongated conductor and selected conductive elements on an electrical assembly. 3,812,581, Cl. 29-628.000.
Laser Systems & Electronics, Inc.: *See*—
Hines, Robin H.; Hollinshead, William L.; and Forester, John K., 3,813,165.
Laserplane Corporation: *See*—
Teach, Ted L.; and Ramsay, James D., 3,813,171.
Lasoen, Jean J., to Massey-Ferguson Inc. Draft sensing unit for tractor. 3,812,916, Cl. 172-7.000.
Latinen, George A.; deceased (by Latinen, May V.; administratrix), to Monsanto Company. Wiped film devolatilization process. 3,812,897, Cl. 159-49.000.
Latinen, George A.; deceased (by Latinen, May V.; administratrix), to Monsanto Company. Continuous mass polymerization process. 3,813,369, Cl. 260-80.600.
Latinen, May V.: *See*—
Latinen, George A., 3,812,897.
Latinen, George A., 3,813,369.
Latrobe Steel Company: *See*—
Schlatter, Rene, 3,812,899.
Lauck, Robert B.; Meyer, Lawrence L.; and Cargo, Charles H., to Eaton Corporation. Hydrostatic transmission control system. 3,812,925, Cl. 180-6.480.
Laurencier, Andre: *See*—
Coville, Patrick; and Laurencier, Andre, 3,812,908.
Laurent, Henry: *See*—
Hofmeister, Helmut; Laurent, Henry; Prezewowsky, Klaus; and Wiechert, Rudolf, 3,813,418.
Laurent, Roger, to Poma 2. 000 S.A., mesne. Transport installation with independent vehicles. 3,812,788, Cl. 104-130.000.
Laverman, Royce Jay, to Chicago Bridge & Iron Company. Method for storing a subcooled liquid. 3,812,683, Cl. 62-45.000.
Lawrence Brothers, Inc.: *See*—
Lawrence, Edwin F., III; and McNinch, Delmar D., 3,813,149.
Lawrence, Edwin F., III; and McNinch, Delmar D., to Lawrence Brothers, Inc. Pivotal mounting device for stadium seats and the like. 3,813,149, Cl. 297-335.000.
Laycock, Geoffrey, to Underground Mining Machinery Limited. Production of coated roadstone. 3,812,821, Cl. 118-418.000.
Lear Motors Corporation: *See*—
Lear, William P., 3,812,826.
Lear Siegler, Inc.: *See*—
Wootten, John A.; and Rives, George S., 3,812,843.
Lear, William P., to Lear Motors Corporation. Combustor for power vapor generators. 3,812,826, Cl. 122-250.00r.
Leaver, Bernard; and Mercer, Willard, to United Kingdom Atomic Energy Authority. Nuclear reactor fuel assembly spacer grid. 3,813,288, Cl. 176-78.000.
Lee, Henry B.; Orem, Donald E.; and Wycoff, Paul L., to Ransburg Corporation. Spraying machine. 3,812,728, Cl. 74-25.000.
Lee, Howard A.: *See*—
Shieh, Kenneth K.; Donnelly, Brendan J.; and Lee, Howard A., 3,813,320.
Lee, Raymond, Organization, The: *See*—
Brach, Walter H., 3,813,182.
Leesona Corporation: *See*—
Anderson, Ernest David; and Cowan, Larry Clyde, 3,812,881.

Lefebvre, Michel S. M.; and Lapierre, Philippe D., to Omnium de Prospective Industrielle S.A. Apparatus for drying damp web material. 3,812,598, Cl. 34-155.000.
Leflaive, Vincent Rene: *See—*
Guerin, Daniel L. G., 3,813,014.
Lehr, Heinz, to Condux-Werk, Herbert A. Merges KG. Cutting mill. 3,813,048, Cl. 241-224.000.
Lehureau, Jean: *See—*
Masotti, Robert; Rieux, Jean-Philippe; Borrel, Philippe; and Lehureau, Jean, 3,813,282.
Leihgeber, Bucket Booms: *See—*
Leihgeber, Joseph Q., 3,812,979.
Leihgeber, Joseph Q., to Leihgeber, Bucket Booms. Lift boom for a front loader tractor. 3,812,979, Cl. 212-35.00r.
Lemma, Aklilu; Parkhurst, Robert M.; and Skinner, William A., Jr., to Ethiopian Science Foundation. Method of producing a molluscicide from endod. 3,813,383, Cl. 260-236.500.
Lenke, Dieter: *See—*
Vogelsang, Dietrich; Scheffler, Gerhard; Brock, Norbert; and Lenke, Dieter, 3,813,384.
Lenkowski, Przemyslaw: *See—*
Kycia, Henryk; Chmielewska, Danuta; Rolak, Hanna; Michno, Zbigniew; Zaniuk, Jan; Surgiewicz, Janusz; Stefaniak, Ferdynand; Lenkowski, Przemyslaw; and Kobosko, Anna, 3,813,415.
Lenning, David Lees, to United Kingdom Atomic Energy Authority. Heat exchangers. 3,812,907, Cl. 165-83.000.
Lenz, Karl Egon. Combination opener and pouring device for cans and the like. 3,813,009, Cl. 222-90.000.
Lerch, Adolph F.; Otis, Nick C.; and Montgomery, John D., to Advance Housing Corporation. Method of assembling a building. 3,812,638, Cl. 52-747.000.
Lerner, Irwin S.: *See—*
Lerner, Irwin S.; and Walla, Joann R. (said Walla assor. to said), 3,813,465.
Lerner, Irwin S.; and Walla, Joann R., said Walla assor. to said Lerner, Irwin S. Cytological preservative and mucolytic composition. 3,813,465, Cl. 424-3.000.
Lesnick, Edward: *See—*
Koplow, Harold Stanley; Eberle, Fritz; Ho, Shu-Kuang; and Lesnick, Edward, 3,812,945.
Leszczak, Nicholas: *See—*
Spanel, Abram N.; Wittler, Bernard H.; and Leszczak, Nicholas, 3,812,799.
Levine, Alfred: *See—*
Parfomak, Walter; Anderson, Richard John; and Levine, Alfred, 3,813,665.
LeVitt, Richard M., to East Bay Municipal Utility District. Tachometer for low speed measurement. 3,813,597, Cl. 324-176.000.
Lewis Engineering Company, The: *See—*
Edwards, Harrison F.; and Pannullo, Louis A., 3,813,566.
Lewis, Jay L.; Puster, Louis M.; and Brakebill, Harold G., to Robertshaw Controls Company. Temperature responsive device and method of making the same. 3,813,034, Cl. 236-87.000.
Lewis, Nigel W. Electrical alarm systems. 3,813,662, Cl. 340-213.00r.
Lewis, Paul E., to McDonnell Douglas Corporation. Combination container and skid support. 3,812,995, Cl. 220-1.500.
Lewis, Robert W. Miter clamp vise and saw. 3,812,751, Cl. 83-471.300.
Leybold-Heraeus-Verwaltung GmbH: *See—*
Wilmanns, Ingo, 3,812,596.
Lhomme (Societe Anonyme): *See—*
Biancamaria, Joseph, 3,813,026.
Liber, Michel, to Seilib. Rotatable catch. 3,813,118, Cl. 292-54.000.
Licentia Patent-Verwaltungs-G.m.b.H.: *See—*
Joshi, Vishnuprakash, 3,813,291.
Lieberman, Gilbert. Lampshade and lamp combination and means for joining one with the other. 3,813,537, Cl. 240-108.00r.
Liemburg, Alt: *See—*
De Vries, Jan Lolke; and Liemburg, Alt, 3,813,573.
Lievremont, Henri; and Cominassi, Adolphe. Fire-retardant material or conglomerate containing filler consisting essentially of magnesium silicate. 3,813,356, Cl. 260-2.50f.
Lilly, Eli, and Company: *See—*
Bach, Nicholas J.; and Farkas, Eugene, 3,813,419.
Doherty, George O. P., 3,813,407.
Doherty, George O. P.; and Fuhr, Kenneth H. (said Doherty, now by change of name O'Doherty, George O., P., assors. to), 3,813,408.
Hayes, Harold B., 3,813,389.
Lilly Industries, Limited: *See—*
Evans, Delme, 3,813,360.
Hughes, Peter Graham; and Verge, John Pomfret, 3,813,401.
Lindeborg, Georg D.; and Heine, Desire, to Norba Aktiebolag. Compressing feed screw. 3,812,985, Cl. 214-83.320.
Lindner, Robert G.: *See—*
Albrecht, Raymond E.; Curran, Bernard E.; and Lindner, Robert G., 3,812,636.
Linn, Wallace Leon. Engine. 3,812,827, Cl. 123-8.010.
Lintner, Michael A.; and Long, Louis, Jr., to United States of America, Army. p-[1-(Nonylthio)ethyl]benzenesulfonates. 3,813,431, Cl. 260-505.00r.
Lipp, Alfred, to Elektroschmelzwerk Kempten GmbH. Sintered refractory material. 3,813,252, Cl. 252-520.000.
Lippert, Axel: *See—*
Sajben, Johannes Otto; Lippert, Axel; Stumpen, Klaus; and Grunewald, Rainer, 3,812,885.
Lipstein, Norman J., to General Electric Company. Method for purging dip forming crucible environment. 3,813,260, Cl. 117-114.00r.
Litton Industries, Inc.: *See—*
Dunn, Elman R., 3,812,624.
Livingston, William L., to Factory Mutual Research Corporation. Discharge head having constant force plug retaining member. 3,812,915, Cl. 169-38.000.
LKB Medical AB: *See—*
Olofsson, Sven; and Tysk, Jan, 3,812,714.
Lockwood Corporation: *See—*
Campbell, Gary; and Buckingham, Eliot K., 3,812,737.
Long, Leo E. Punching bag and mount therefor including automatic spring return for the punching bag. 3,813,095, Cl. 272-78.000.
Long, Louis, Jr.: *See—*
Lintner, Michael A.; and Long, Louis, Jr., 3,813,431.
Longi, Paolo: *See—*
Chiolle, Antonio; Credali, Lino; Longi, Paolo; Greco, Francesco; and D'Angelo, Romano, 3,813,354.
Longoni, Angelo: *See—*
Losco, Giuseppe; Reggio, Antonino; Michieli, Giannantonio; and Longoni, Angelo, 3,813,440.
Loo, Brian Hum, to Northrop Corporation. Apparatus and method for performing on linemonitoring and fault-isolation. 3,813,647, Cl. 340-172.500.
L'Oreal: *See—*
Morane, Bruno Pierre, 3,812,866.
Losco, Giuseppe; Reggio, Antonino; Michieli, Giannantonio; and Longoni, Angelo, to Montedison S.p.A. Oxime carbamate exerting a pesticidal action. 3,813,440, Cl. 260-566.0ac.
Loustau, Jean. Method for constructing a honeycomb structure and a device for carrying out said method. 3,813,273, Cl. 156-469.000.
Louwaard, Richardus Theodorus Gerardus: *See—*
Wijnant, Petrus Leo Clemens; and Louwaard, Richardus Theodorus Gerardus, 3,813,134.
Lovett, John R. Method of applying a roller sleeve on a conveyor roller. 3,812,562, Cl. 29-148.40d.
Lowen, Michael David; and Newby, Ronald, to Laing, John, and Son Limited. Severing and dispensing fibrous material. 3,812,749, Cl. 83-66.000.
LRC, Inc.: *See—*
Williams, Heyward Sturges; and Robbins, Robert, 3,813,561.
LTV Aerospace Corporation: *See—*
Nelson, Roy A., 3,812,789.
Ludszeweit, Dieter: *See—*
Rudszinat, Willy; and Ludszeweit, Dieter, 3,812,950.
Luerssen, Hermann: *See—*
Jochim, Friedrich; Peetz, Dieter; Karla, Heinz; and Luerssen, Hermann, 3,813,519.
Luginbuhl, Pierre, to Schweizerische Industrie-Gesellschaft. Device for separating and conveying of articles, for example, chocolate bars. 3,812,948, Cl. 198-29.00r.
Lukasczyk, Hans, to Volkswagenwerk Aktiengesellschaft. Gauge for shiftable synchronizing swivel joints. 3,812,594, Cl. 33-174.00r.
Lukowicz, Nick. Pneumatic drive system for a sewing machine. 3,812,801, Cl. 112-121.140.
Lundgren, William E. Temple roll. 3,812,561, Cl. 29-121.00a.
Lush, John S., to Anchor Hocking Corporation. Crack-off apparatus for glass articles. 3,812,949, Cl. 198-21.000.
Lutz, George H. Heating system. 3,813,036, Cl. 237-2.00r.
Lyon, James. Differential beak trimmer. 3,812,857, Cl. 128-303.100.
Mac Engineering & Equipment Company, Inc.: *See—*
McAlpine, Charles H., 3,813,214.
Machida, Takayasu: *See—*
Nikaido, Akira; Nakajima, Fumio; Onda, Mitsuo; Machida, Takayasu; and Toida, Takashi, 3,812,670.
Machine Tool Divisional Services Limited: *See—*
Southworth, Christopher John Morrison, 3,812,761.
Macindoe, George F.: *See—*
Kivlen, John A.; Orr, Richard L.; Chwab, William H.; and Macindoe, George F., 3,812,663.
Macomber, Robert I.: *See—*
Auray, Didier Henri; Downey, Richard T.; and Macomber, Robert I., 3,813,023.
Magnavox Company, The: *See—*
Mierzwinski, Eugene Peter, 3,813,686.
Mahurin, Ballard Terry: *See—*
Kudsi, Bader S.; and Mahurin, Ballard Terry, 3,813,516.
Maillet, Wilfrid G., to Communications Satellite Corporation. TDMA bursts acquisition system. 3,813,496, Cl. 179-15.0bs.
Makhlouf, Joseph M., to PPG Industries, Inc. Thermosetting non gelled hydroxyl functional coating on an inked metallic article. 3,813,254, Cl. 117-12.000.
Malamoud, Jean Gaston, to DuPont, S. T. Flint lighters with a rotary knurled wheel. 3,813,208, Cl. 431-277.000.
Malang, Siegfried, to Gesellschaft fur Kernforschung mbH. Nuclear reactor fuel element. 3,813,287, Cl. 176-68.000.
Manachini, Luigi: *See—*
Craveri, Renato; Manachini, Luigi; and Aragozzini, Fabrizio, 3,813,319.
Manceau, Marcel: *See—*
Guerin, Daniel L. G., 3,813,014.
Manderscheid, Peter: *See—*

Heitland, Herbert; and Manderscheid, Peter, 3,813,226.

Mandzjuk, Boris Valentinovich: *See—*
Drobich, Oleg Pavlovich; Pritomanov, Alexei Evgenievich; Rokutov, Viktor Petrovich; Kirvalidze, Nikolai Spiridonovich; Gerzmava, Dusheli Vladimirovich; and Mandzjuk, Boris Valentinovich, 3,813,335.

Mann, Henry, Inc.: *See—*
Tepper, Leonard, 3,812,703.

Mannens, Marc Godfried; Jaeken, Jan; Janssens, Wilhelmus; and Priem, Jan Jozef, to Agfa-Gevaert N.V. Ultraviolet-absorbing polymers compositions and filter. 3,813,255, Cl. 117-33.300.

Mansei Kogyo Kabushiki Kaisha: *See—*
Moriya, Nobuyoshi, 3,813,206.

Manser, Josef, to Gebrueder Buehler AG. Combined mixer, kneader and presser particularly for food precessing. 3,813,082, Cl. 259-6.000.

Marans, Nelson S., to Grace, W. R., & Co. Preparation of pure glycine. 3,813,434, Cl. 260-534.00e.

Marcona Corporation: *See—*
Sims, Wilbert Norman; and Miscovich, John A., 3,813,125.

Marder, Herman Lowell: *See—*
Hunter, Robert Tweedy, Jr.; and Marder, Herman Lowell, 3,813,359.

Marfy, Zoltan Josef, to Clark and Smith Industries, Limited. Tape machine with index members to control tape transport. 3,813,689, Cl. 360-74.000.

Margeson, Mark A.: *See—*
Boehringer, Raymond H.; Wilson, Ronald M.; and Margeson, Mark A., 3,813,339.

Maringer, Robert E.: *See—*
Stewart, Oliver M.; Maringer, Robert E.; and Mobley, Carroll E., Jr., 3,812,901.

Markevich, Vitaly Mikhailovich: *See—*
Rogalsky, Anatoly Viktorovich; Markevich, Vitaly Mikhailovich; Kheifets, Georgy Naumovich; Zaichenko, Jury Leonidovich; Baburov, Valery Efremovich; Pavlovsky, Vladimir Petrovich; Golban, Eduard Vasilievich; Pechennik, Leonid Naumovich; Knyazhinsky, Zakhar sipovich; Bogatov, Nikolai Alexandrovich; Raichuk, Jury Isaakovich; Zaritsky, Vaktor Nikolaevich; and Grodzitsky, Evgeny Fedorovich, 3,812,909.

Marks, Alvin M. Electro-optical dipolar material. 3,813,265, Cl. 117-211.000.

Maroney, William J., to Sybron Corporation. Apparatus for fluid treatment. 3,812,969, Cl. 210-274.000.

Marsalek, Milan; Junek, Jan; Brynda, Vaclav; Burysek, Frantisek; Hortlik, Frantisek; Ripka, Josef; and Lanta, Jiri, to Vyzkumny Ustav Bavlnarsky. Ringless spinning of separated staple fibres. 3,812,667, Cl. 57-58.890.

Marsch, Lawrence F.: *See—*
Higgs, Kenneth O.; Richmond, Robert C.; and Marsch, Lawrence F., 3,812,706.

Marshall, Preston F.; and Silvi, James J., to Kendall Company, The. Reorientation of fibers in a fluid stream. 3,812,553, Cl. 19-156.300.

Martin, Anthony N., to United Aircraft Corporation. Automatic aircraft engine pressure ratio control system. 3,813,063, Cl. 244-77.00d.

Martinie, Howard M., to SKF Industries, Inc. Self orienting contoured hollow ball for high speed bearing. 3,813,135, Cl. 308-188.000.

Marumo, Hideo. Surface modifier for synthetic high polymers. 3,813,422, Cl. 260-429.00r.

Marvin, Stuart R. Article collecting device. 3,813,121, Cl. 294-1.00r.

Mary, Donald J., to United States of America, Army and Optical displacement indicator. . 3,813,166, Cl. 356-28.000.

Masaki, Tatsuo: *See—*
Kitajima, Nobuo; Masaki, Tatsuo; and Kondo, Hideyo, 3,813,243.

Maschinenfabrik Reinhausen Gebruder Scheubeck K.G.: *See—*
Breuer, Wolfgang, 3,813,503.

Maschke, Marvin Walter, to Stolle Corporation, The. Driving or idler drum for article feeding belt. 3,812,953, Cl. 198-131.000.

Mason, Daniel W.; and Nester, Henry H., deceased (by Nester, Dianne L.; special administratrix), to Owens-Illinois, Inc. Dielectric materials. 3,813,295, Cl. 117-221.000.

Mason, John R., to Dracon Industries. Electrical terminal connector. 3,813,636, Cl. 339-59.00r.

Mason, Lowell M., to General Electric Company. Apparatus for handling magnetic cores and performing winding procedures. 3,812,570, Cl. 29-205.00d.

Masoneilan International, Inc.: *See—*
Baumann, Hans D.; and Keith, Gareth Allan, 3,813,079.

Masotti, Robert; Rieux, Jean-Philippe; Borrel, Philippe; and Lehureau, Jean, to Progil. Laminating process including cathode sputtering of carbon substrate. 3,813,282, Cl. 161-164.000.

Massachusetts Institute of Technology: *See—*
Szoke, Abraham, 3,813,605.

Masserschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung: *See—*
Hermann, Gunter, 3,813,112.

Massey-Ferguson Inc.: *See—*
Lasoen, Jean J., 3,812,916.

Massie, Stephen N., to Universal Oil Products Company. Preparation of dihydroxybiphenyls. 3,813,445, Cl. 260-620.000.

Massie, Stephen N., to Universal Oil Products Company. Nuclear chlorination of alkyl substituted aromatic compounds. 3,813,448, Cl. 260-650.00r.

Massoth, Franklin E.: *See—*
Carr, Norman L.; Massoth, Franklin E.; Stahlfeld, Donald L.; and Young, John E., Jr., 3,812,652.

Massoth, Franklin E.; and Young, John E., Jr., to Gulf Research & Development Company. Process for reducing the arsenic content of gaseous hydrocarbon streams by use of supported copper or copper oxide. 3,812,653, Cl. 55-68.000.

Masuelli, Frank J.: *See—*
Picard, Jean P.; Satriana, Daniel R.; and Masuelli, Frank J., 3,813,439.

Matson, Merkham J.: *See—*
Curtz, William C.; and Matson, Merkham J., 3,812,724.

Matsuda, Youichi; Suzuki, Hiroshi; Shito, Nobuhiko; and Saito, Yosushi, to Hitachi, Ltd. High resistance resistor device for DC high voltage circuits. 3,813,631, Cl. 338-320.000.

Matsui, Shigenori: *See—*
Nishikawa, Yukio; Nagao, Yoshio; Miyauchi, Yoshio; Mori, Noriaki; and Matsui, Shigenori, 3,813,682.

Matsumoto, Hirofumi: *See—*
Nakada, Masahiko; and Matsumoto, Hirofumi, 3,813,085.

Matsumura, Koichi: *See—*
Shima, Shunji; Kadowaki, Hideyoshi; Muto, Eiji; Okazaki, Ichiro; and Matsumura, Koichi, 3,813,300.

Matsushita Electric Industrial Co., Ltd.: *See—*
Higashiyama, Kenji; and Hirata, Hiroshi, 3,813,324.
Ikeda, Mitsusuke; Sato, Hisanao; Torii, Etsuko; Morimoto, Kazuhisa; and Hasegawa, Yo, 3,813,242.
Mino, Mineo; Fujisawa, Kiyoji; and Tanabe, Kenzo, 3,813,484.
Sakumoto, Hideki; Namoto, Yoshiteru; Ushihara, Masaharu; Tanigawa, Shizuhiko; and Kanda, Shozo, 3,813,057.
Saruwatari, Shigeto, 3,812,818.
Sato, Kohei, 3,813,574.
Shimotsuma, Wataru, 3,813,677.

Matzner, Markus; and McGrath, James E., to Union Carbide Corporation. Lactam polymerization with halogen substituted aromatic initiators. 3,813,367, Cl. 260-78.001.

Mauri, Marcello Massi; and Moggi, Pietro Antonio, to Snam Progetti, S.p.A. Oxidative dehydrocyclization process of imines. 3,813,377, Cl. 260-279.00r.

Maus, Otfrid: *See—*
Frank, Helmut; Maus, Otfrid; and Tary, Endre, 3,812,725.

Maxson Corporation, The: *See—*
Barnard, Benjamin R., 3,812,791.

Mazzeo, Michael P.: *See—*
Gillis, Marina N.; and Mazzeo, Michael P., 3,813,361.

Mc Atee, Kerry D.: *See—*
Ray, Robert L.; Champeau, William J.; and Mc Atee, Kerry D., 3,813,197.

McAlpine, Charles H., to Mac Engineering & Equipment Company, Inc. Drying oven for lead battery plates. 3,813,214, Cl. 432-144.000.

McAnespie, Donald; and Laliberte, Robert Justin; deceased (by Laliberte, Carolyn Doris; executrix), to Midland-Ross Corporation. Web stabilizing device. 3,813,019, Cl. 226-97.000.

McCarthy, Donald Delbert. Counting system for articles in a streamlined stack. 3,813,522, Cl. 235-98.00r.

McCormick, Alan G. Fuel injection system and associated structure. 3,812,829, Cl. 123-32.0vn.

McDonnell Douglas Corporation: *See—*
Lewis, Paul E., 3,812,995.
Watson, Fred D.; and Mohr, John L., 3,813,526.

McGrath, James E.: *See—*
Matzner, Markus; and McGrath, James E., 3,813,367.

McGraw-Edison Company: *See—*
McStrack, Darrel D.; and Schroeder, James E., 3,813,296.

McGregor, William H.: *See—*
McKinley, Wayne A.; and McGregor, William H., 3,813,382.

McGruder, Ivory. Battery operated coffee maker. 3,813,517, Cl. 219-438.000.

McIntosh, Ronald C.: *See—*
Purdy, Haydn V.; and McIntosh, Ronald C., 3,813,683.

McIntyre, Edwin L. Positive contact rotary thermocouple unit. 3,812,716, Cl. 73-341.000.

McKelvey, John B.; and Benerito, Ruth R., to United States of America, Agriculture. Use of epoxides in the preparation of higher fatty acid anhydrides. 3,813,421, Cl. 260-398.000.

McKie, Joseph: *See—*
Shaw, Alexander; and McKie, Joseph, 3,812,743.

McKinley, Wayne A.; and McGregor, William H., to American Home Products Corporation. Analogs of luteinizing hormone releasing factor substituted in position 9. 3,813,382, Cl. 260-112.500.

McKinley, William R.: *See—*
Smith, John I.; and McKinley, William R., 3,813,653.

McMillin, John R.: *See—*
Hassell, David A.; and McMillin, John R., 3,813,010.

McNally, Violet M. Combination shipping and cooking container. 3,812,997, Cl. 220-22.000.

McNinch, Delmar D.: *See—*
Lawrence, Edwin F., III; and McNinch, Delmar D., 3,813,149.

McQueen, Malcolm M. Seal. 3,813,105, Cl. 277-164.000.

McStrack, Darrel D.; and Schroeder, James E., to McGraw-Edison Company. Insulating coating for electrical devices. 3,813,296, Cl. 117-229.000.

Mead Corporation, The: *See—*
Steffy, Jack J.; and Duffield, Peter L., 3,813,675.

Mears, James William, to International Telephone and Telegraph Corporation. Automatic on-off sprinkler. 3,812,914, Cl. 169-20.000.

Meletti, Adolph; and Tamarin, Bernard J., to Vacuum Cleaner Corporation of America. Electrical cord-reel apparatus. 3,813,501, Cl. 191-12.20r.

Menichelli, Vincent J.: *See—*
Yang, Lien C.; and Menichelli, Vincent J., 3,812,783.

Mercer, Willard: *See—*
Leaver, Bernard; and Mercer, Willard, 3,813,288.

Merkle, Frank P., Jr. Mounting means for a refractory shield. 3,812,798, Cl. 110-99.00r.

Merola, Anthony, to Amerola Products Corporation. Clamp. 3,813,090, Cl. 269-217.000.

Merola, Vincent Anthony. Footwear upper protector for cycle riders. 3,812,606, Cl. 36-72.00r.

Merrell, Kenneth C.; Scott, Timothy F.; Brushwyler, Gordon R.; Koegel, James H.; and Poindexter, William E., to Robertshaw Controls Company. Continuous respirmometer apparatus. 3,813,325, Cl. 204-195.00b.

Merrick, Jim I.; Carlson, Carl J., Jr.; and Carlson, Donald W., to Triad Fastener Corporation. Screw package. 3,812,961, Cl. 206-338.000.

Merrow Machine Company, The: *See—*
Pierce, Bernard N., 3,812,802.

Messrs. Tiwi Oy: *See—*
Ervast, Armas, 3,812,893.

Metrolab, Inc.; a subsidiary of Cubic Corporation: *See—*
Roes, John B., 3,812,579.

Metzger, Harold M. Couch. 3,813,091, Cl. 269-322.000.

Meyer, Karl Arthur. Cam action tangential tracking tone arm pivot mechanism. 3,813,100, Cl. 274-23.00a.

Meyer, Lawrence L.: *See—*
Lauck, Robert B.; Meyer, Lawrence L.; and Cargo, Charles H., 3,812,925.

Meyer, Lawrence L., to Eaton Corporation. Holding clamp. 3,812,557, Cl. 24-263.00a.

Meyer, Ulrich, to Vereinigte Flugtechnische Werke-Fokker, Gesellsschaft mit beschrankter Haftung. Automatically controlled brake actuator for unmanned vehicles. 3,812,750, Cl. 188-106.00p.

Meyercord Co., The: *See—*
Kerwin, Daniel, 3,813,268.

Michaels, Alan S.; Buckles, Richard G.; and Keller, Michael P. Ultrasonic nebulizer. 3,812,854, Cl. 128-194.000.

Michaud, Orean E., to Colt Industries Operating Corporation. Multifunction thread gage. 3,812,591, Cl. 33-199.000.

Michieli, Giannantonio: *See—*
Losco, Giuseppe; Reggio, Antonino; Michieli, Giannantonio; and Longoni, Angelo, 3,813,440.

Michno, Zbigniew: *See—*
Kycia, Henryk; Chmielewska, Danuta; Rolak, Hanna; Michno, Zbigniew; Zaniuk, Jan; Surgiewicz, Janusz; Stefaniak, Ferdynand; Lenkowski, Przemyslaw; and Kobosko, Anna, 3,813,415.

Microwave and Electronic System Limited: *See—*
Allen, Howard John Brandsom; and Johnston, James Meill, 3,813,655.

Midland-Ross Corporation: *See—*
McAnespie, Donald; and Laliberte, Robert Justin, 3,813,019.

Midwesco-Enterprise, Inc.: *See—*
Hallwood, Harry, 3,812,886.

Mierzwinski, Eugene Peter, to Magnavox Company, The. Ambient light responsive control of brightness, contrast and color saturation. 3,813,686, Cl. 358-27.000.

Mihic, Wlajko; and Back, Stig Ove, to Mircona AB. Tool holder assembly. 3,812,560, Cl. 29-96.000.

Miki, Yasuhiro; and Kumanogo, Tadaki, to Pioneer Electronic Corporation. Fibrous vibration plate for loudspeaker and production thereof. 3,813,284, Cl. 162-219.000.

Miller, Eric, to Glenfield & Kennedy Limited. Hydraulic installation. 3,812,871, Cl. 137-1.000.

Miller, Gabriel Lorimer; and Robinson, David Arthur Hall, to Bell Telephone Laboratories, Incorporated. Semiconductor diode thermometry. 3,812,717, Cl. 73-362.0sc.

Miller, Harry B., to Industrie-Werke Karlsruhe Augsbury Aktiengesellschaft. Yarn aspirator. 3,813,020, Cl. 226-97.000.

Miller, Harry B., to Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft. Bobbin-supporting chuck. 3,813,051, Cl. 242-46.400.

Miller, Stewart Edward, to Bell Telephone Laboratories, Incorporated. Single material optical fiber structures including thin film supporting members. 3,813,141, Cl. 350-96.0wg.

Mino, Mineo; Fujisawa, Kiyoji; and Tanabe, Kenzo, to Matsushita Electric Industrial Co., Ltd. Magnetic tape reproducing system for stop motion video with audio. 3,813,484, Cl. 178-6.6fs.

Minolta Camera Kabushiki Kaisha: *See—*
Naya, Mikio, 3,813,543.
Sahara, Masayoshi, 3,813,681.

Minsk, Louis Morton; and Staples, Jon Tewsbury, to Eastman Kodak Company. Photographic element containing non-diffusing polymeric development accelerators. 3,813,247, Cl. 96-68.000.

Mintz, Marcus; and Engelhardt, Bernard H., to Industrial Knitting, Inc. Method and apparatus for packaging a product. 3,812,642, Cl. 53-21.00r.

Minyard, James P.: *See—*
Gueldner, Richard C.; Tumlinson, James H., III; Hardee, Dicky D.; Hedin, Paul A.; Thompson, Alonzo C.; and Minyard, James P., 3,813,443.

Mio, Takeshi: *See—*
Tanaka, Kyoichi; Mio, Takeshi; and Tanaka, Toyoyasu, 3,813,447.

Mircona AB: *See—*
Mihic, Wlajko; and Back, Stig Ove, 3,812,560.

Miscovich, John A.: *See—*
Sims, Wilbert Norman; and Miscovich, John A., 3,813,125.

Misdom, Theodore H., Jr.; and Boyd, James W., to Packaging Corporation of America. Carton construction. 3,813,027, Cl. 229-45.000.

Miskolczy, Gabor; Shefsiek, Paul K.; and Brosens, Pierre J., to Thermo Electron Corporation. Cement kiln and method. 3,813,210, Cl. 432-15.000.

Mitchell, Graham R., to General Electric Company. Vacuum-type circuit breaker with improved ability to interrupt capacitance currents. 3,813,506, Cl. 200-144.00b.

Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Yokoyama, Nobuo; and Ujihara, Takasumi, 3,812,771.

Mitsubishi Paper Mills, Ltd.: *See—*
Futaki, Kiyoshi; Tsukahara, Hirokazu; and Emoto, Kazuhiro, 3,813,248.

Mitsubishi Pencil Co., Ltd.: *See—*
Kamo, Mitsunori, 3,813,176.

Mitsubishi Rayon Company Limited: *See—*
Joh, Yasushi; and Sugimori, Teruhiko, 3,813,372.

Mitsubishi Seiko Kabushiki Kaisha: *See—*
Abe, Yoshihiko, 3,813,240.

Mitsui Shipbuilding and Engineering Co., Ltd.: *See—*
Ando, Shigemi, 3,812,807.

Miyajima, Nobuo; Keneko, Kozo; Ohnuki, Iwao; and Noboru, Okubo. Furnace body supporting structure for blast furnaces. 3,813,088, Cl. 266-25.000.

Miyamatsu, Yasunori: *See—*
Kawaguchi, Kiyoshi; Miyamatsu, Yasunori; Kamoi, Arao; and Fukuda, Kinya, 3,812,697.

Miyamatsu, Yasunori; Kamoi, Arao; and Fukuda, Kinya, to Toyo Kohan Co., Ltd. Method and an apparatus of leveling a metal strip. 3,812,701, Cl. 72-163.000.

Miyamoto, Masao: *See—*
Aya, Masahiro; Miyamoto, Masao; Fukawawa, Nobuo; and Ohsuga, Shigeki, 3,813,405.

Miyauchi, Yoshio: *See—*
Nishikawa, Yukio; Nagao, Yoshio; Miyauchi, Yoshio; Mori, Noriaki; and Matsui, Shigenori, 3,813,682.

Miyazako, Takushi: *See—*
Takamura, Yoshihiko; Nakajima, Yosuke; Ohi, Reiichi; and Miyazako, Takushi, 3,813,250.

Mobil Oil Corporation: *See—*
Givens, Edwin N.; Plank, Charles J.; and Rosinski, Edward J., 3,813,330.
Heiba, El Ahmadi I.; and Dessau, Ralph M., 3,813,416.
Heilweil, Israel J.; and Srinivasan, Sundaresa, 3,813,290.
Weisz, Paul B.; and Silvestri, Anthony J., 3,813,331.

Mobley, Carroll E., Jr.: *See—*
Stewart, Oliver M.; Maringer, Robert E.; and Mobley, Carroll E., Jr., 3,812,901.

Mochizuki, Matsuji. Airplane. 3,813,060, Cl. 244-13.000.

Moe, James A.; and Ross, Thomas J. Vending machine module. 3,813,005, Cl. 221-90.000.

Moeller, Axel, to Moeller Manufacturing Co., Inc. Controlled expansion marine plug. 3,812,810, Cl. 114-197.000.

Moeller Manufacturing Co., Inc.: *See—*
Moeller, Axel, 3,812,810.

Moggi, Pietro Antonio: *See—*
Mauri, Marcello Massi; and Moggi, Pietro Antonio, 3,813,377.

Mohan, William L.; and Willits, Samuel P., to Spartanics, Ltd. Pitch matching detecting and counting system. 3,813,523, Cl. 235-92.0sb.

Mohasco Industries, Inc.: *See—*
Katz, Alex J.; and Caldwell, Robert J., 3,813,150.

Mohr, John L.: *See—*
Watson, Fred D.; and Mohr, John L., 3,813,526.

Mohr, Robert G.; and Olree, Adrian R., to Steelcase Inc. Dual torsion bar chair control. 3,813,073, Cl. 248-373.000.

Molbert, Robert A., to General Tire & Rubber Company, The. Method of making fiberglass thermoplastic sheets. 3,813,269, Cl. 156-272.000.

Molex Incorporated: *See—*
Kufner, Kenneth L.; Pellegrino, Thomas P.; and Chmela, Frank P., 3,812,569.

Monley, Richard Leo, Jr.: *See—*
Gilbert, Ronald Edward; and Monley, Richard Leo, Jr., 3,813,231.

Monroe Belgium N.V.: *See—*
Fader, John H.; Keijzer, Johan H.; Graulus, Marcel J. R.; and Beets, Roland H. C., 3,812,938.

Monsanto Company: *See—*
Baldyga, Eugene P.; and Griesing, John E., 3,812,646.
Canfield, Robert C.; Neta, Thomas E.; and Wiesenborn, Robert F., 3,813,451.
Howe, Robert K., 3,813,234.
Latinen, George A., 3,812,897.
Latinen, George A., 3,813,369.
Paulik, Frank E.; Hershman, Arnold; Knox, Walter R.; and Roth, James F., 3,813,428.
Phillips, Wendell Gary, 3,813,426.
Wood, Alvin P.; and Ratts, Kenneth Wayne, 3,813,435.

Montecatini Edison S.p.A.: *See—*
Chiolle, Antonio; Credali, Lino; Longi, Paolo; Greco, Francesco; and D'Angelo, Romano, 3,813,354.

Gambaretto, Gian Paolo; Tlaamini, Gianpietro; and Palma, Giancarlo, 3,813,370.
Montedison S.p.A.: *See*—
Losco, Giuseppe; Reggio, Antonino; Michieli, Giannantonio; and Longoni, Angelo, 3,813,440.
Montgomery, John D.: *See*—
Lerch, Adolph F.; Otis, Nick C.; and Montgomery, John D., 3,812,638.
Moore, Francis M. Attaching bracket with receptacle holder. 3,813,072, Cl. 248-313.000.
Moore, William C.; and Connors, John D., to Welch Allyn, Inc. Combination battery handle-case for a pair of attached, outfolding illuminated medical instruments. 3,812,847, Cl. 128-9.000.
Morane, Bruno Pierre, to L'Oreal. Hair curler. 3,812,866, Cl. 132-40.000.
Mordehai, Avraham Ben. Rotary water sprinkler. 3,813,043, Cl. 239-204.000.
Mori, Noriaki: *See*—
Nishikawa, Yukio; Nagao, Yoshio; Miyauchi, Yoshio; Mori, Noriaki; and Matsui, Shigenori, 3,813,682.
Mori, Yoichi; Okazaki, Nobuo; Ohtsuka, Kunio; and Iijima, Tetsuya, to Nissan Motor Company, Limited. Gear train arrangements. 3,812,739, Cl. 74-763.000.
Morimoto, Kazuhisa: *See*—
Ikeda, Mitsusuke; Sato, Hisanao; Torii, Etsuko; Morimoto, Kazuhisa; and Hasegawa, Yo, 3,813,242.
Moriya, Nobuyoshi, to Mansei Kogyo Kabushiki Kaisha. Cigarette lighter. 3,813,206, Cl. 431-143.000.
Mork, Halbert Louis, to TRW Inc. Attitude stabilization system. 3,813,067, Cl. 244-3.220.
Morokin, Anatoly Afonasievich: *See*—
Kaletin, Vladislav Mikhailovich; and Morokin, Anatoly Afonasievich, 3,812,954.
Morozov, Vyacheslav Vyacheslavovich. Device for air distribution in premises. 3,812,770, Cl. 98-40.00d.
Morrison, Alexander Robley. Grain-refining compounds. 3,813,302, Cl. 148-6.15r.
Morse, Albert I.: *See*—
Frederick, Eugene G.; Morse, Albert I.; and Simmonds, Robert C., Jr., 3,813,201.
Mortensen, Donald G., to Wayne Manufacturing Company. Street sweeper broom drive. 3,812,551, Cl. 15-179.000.
Moto-Naute, Inc.: *See*—
Veilleux, Joseph C., 3,812,814.
Motorola, Inc.: *See*—
Brouwers, Karel J.; and Heinle, Preston J., 3,813,379.
Ring, Charles M., 3,813,588.
Moussou, Jean, to Ceraver. Furnace for the thermic treatment of products supported by a gas cushion. 3,813,217, Cl. 432-258.000.
Muehlberg, Harriet W.: *See*—
Muehlberg, John R.; and Muehlberg, Harriet W., 3,812,539.
Muehlberg, John R.; and Muehlberg, Harriet W. Sleeping garment. 3,812,539, Cl. 2-69.500.
Mukai, Cromwell D.; and Weinstein, Bernard, to American Home Products Corporation. Dimethyl sulfoxide containing cleaner compositions. 3,813,343, Cl. 252-111.000.
Muller, Anton: *See*—
Witzel, Gunter; and Muller, Anton, 3,812,896.
Muller, Heinz: *See*—
Muller-Schiedmayer, Gunther; Muller, Heinz; Hubner, Herbert; and Ulm, Klaus, 3,813,441.
Muller, Norbert: *See*—
Krauth, Axel; and Muller, Norbert, 3,813,344.
Muller, Peter, to Andrews Paper & Chemical Co., Inc. Transparentized fibrous materials and process for making same. 3,813,261, Cl. 117-153.000.
Muller-Albrecht, Horst: *See*—
Bock, Eugen; Dollhausen, Manfred; and Muller-Albrecht, Horst, 3,813,380.
Muller-Schiedmayer, Gunther; Muller, Heinz; Hubner, Herbert; and Ulm, Klaus, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the continuous preparation of quaternary ammonium compounds. 3,813,441, Cl. 260-567.600.
Mulvaney, Charles S. Book stand. 3,813,074, Cl. 248-452.000.
Munakata, Tomohiko: *See*—
Nakanishi, Michio; Munakata, Tomohiko; Setoguchi, Shinro; and Fukunari, Sunao, 3,813,395.
Munchback, George E.: *See*—
Walton, Richard R.; and Munchback, George E., 3,813,094.
Murayama, Naohiro; Katto, Takayuki; and Funabashi, Shinichiro, to Kureha Kagaku Kogyo Kabushiki Kaisha. Process for producing porous articles of polytetrafluoroethylene. 3,813,461, Cl. 264-41.000.
Muroki, Takumi; and Tadokoro, Tomoo, to Toyo Kogyo Co., Ltd. Forced draft cooling system for an exhaust gas purifying device. 3,812,673, Cl. 60-286.000.
Murphy, Brian Egmont; Burford, John Reginald; and Wassilieff, Alexander, to Delta Plastics Limited. Animal ear tag applicators. 3,812,859, Cl. 128-330.000.
Murray, Charles Robertson: *See*—
Barnes, John Grober; Bizon, Emil; Murray, Charles Robertson; Rowley, Edward Kenneth; and Waugh, Clayton Thomas, 3,812,769.
Mutchler, Paul A., to United States of America, Army, mesne. Oven combustion products distribution system. 3,812,838, Cl. 126-21.00a.
Muto, Eiji: *See*—
Shima, Shunji; Kadowaki, Hideyoshi; Muto, Eiji; Okazaki, Ichiro; and Matsumura, Koichi, 3,813,300.
Nadella: *See*—
Pitner, Alfred, 3,813,136.
Nagano, Tomoji: *See*—
Shirota, Masahiko; and Nagano, Tomoji, 3,812,808.
Nagao, Yoshio: *See*—
Nishikawa, Yukio; Nagao, Yoshio; Miyauchi, Yoshio; Mori, Noriaki; and Matsui, Shigenori, 3,813,682.
Nagata, Tadayoshi; and Hamanaka, Wahei, to Iwatana & Co., Ltd. Refuse incinerator. 3,812,796, Cl. 110-10.000.
Nagata, Yoshihiro; Yoda, Tadashi; and Tanaka, Yoshinobu, to Kabushiki Kaisha Komatsu Seisakusho. Apparatus for floating a vehicle for underwater operation. 3,812,804, Cl. 114-16.00r.
Naito, Takayuki; and Okumura, Jun, to Bristol-Myers Company. 7-(O-Aminomethylphenyl-acetamido)-3-(3-hydroxypyridazin -6-ylthiomethyl)-3-cephem-4-carboxylic acid. 3,813,376, Cl. 260-243.00c.
Naito, Takayuki; and Okumura, Jun, to Bristol-Myers Company. 7-(O-Aminomethylphenylthioacetamido)-3-(hydroxypyridazin-6 -ylthiomethyl)-3-cephem-4-carboxylic acids. 3,813,390, Cl. 260-243.00c.
Naito, Takayuki; Okumura, Jun; and Kamachi, Hajime, to Bristol-Myers Company. 7-[β-(o-Aminomethylphenyl)propionamido] -3-(tetrazolo[4,5-b]pyridazin-6-ylthiomethyl)-3-cephem-4-carboxylic acid. 3,813,391, Cl. 260-243.00c.
Naka, Kiyomi: *See*—
Watabe, Kaname; Arai, Kosuke; Taneda, Yasuo; and Naka, Kiyomi, 3,813,162.
Nakada, Masahiko; and Matsumoto, Hirofumi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Arrangement for regulating a choke valve in a carburetor. 3,813,085, Cl. 261-39.00b.
Nakajima, Fumio: *See*—
Nikaido, Akira; Nakajima, Fumio; Onda, Mitsuo; Machida, Takayasu; and Toida, Takashi, 3,812,670.
Nakajima, Yosuke: *See*—
Takamura, Yoshihiko; Nakajima, Yosuke; Ohi, Reiichi; and Miyazako, Takushi, 3,813,250.
Nakamoto, Soichi: *See*—
Hasegawa, Goro; Nakamoto, Soichi; and Hosoe, Kazuya, 3,813,679.
Nakanishi, Michio; Munakata, Tomohiko; Setoguchi, Shinro; and Fukunari, Sunao, to Yoshitomi Pharmaceutical Industries, Ltd. 4-Aryl alkyl piperazino thienobenzo thiazepines. 3,813,395, Cl. 260-268.0tr.
Namoto, Yoshiteru: *See*—
Sakumoto, Hideki; Namoto, Yoshiteru; Ushihara, Masaharu; Tanigawa, Shizuhiko; and Kanda, Shozo, 3,813,057.
National Cash Register Company, The: *See*—
Albrecht, Peter M., 3,813,540.
Terbay, Joseph J.; and Taylor, Richard P., 3,812,946.
National Controls, Inc.: *See*—
Rock, Frank C., 3,812,923.
National Research Development Corporation: *See*—
Shaw, Alexander; and McKie, Joseph, 3,812,743.
Nausbaum, Irving, to New Age Minow and Tile Industries, Inc. Glass cutting device. 3,812,748, Cl. 83-12.000.
Naya, Mikio, to Minolta Camera Kabushiki Kaisha. Pattern detecting apparatus. 3,813,543, Cl. 250-562.000.
Neises, Helmut, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Dry mixtures for producing acid-resistant cement and mortar compositions. 3,813,253, Cl. 106-84.000.
Nelson, Carl S., Jr., to Opsonar Organ Corporation, mesne. Musical recording with re-entry track. 3,813,498, Cl. 179-100.30r.
Nelson, Roger John, to Deere & Company. Pump assembly for power steering system. 3,813,188, Cl. 417-202.000.
Nelson, Roy A., to LTV Aerospace Corporation. Transportation system. 3,812,789, Cl. 104-130.000.
Nelson, Terence John: *See*—
Danylchuk, Irynej; Geusic, Joseph Edward; and Nelson, Terence John, 3,813,661.
Nemeth, Edward; and Gromek, Joseph, to VIP Machinery Inc. Apparatus for the application of shrink tubing. 3,812,568, Cl. 29-203.00d.
Neshumaev, Anatoly Dmitrievich; Goncharov, Boris Konstantinovich; Smolyar, Anatoly Alexeevich; and Chigir, Leonid Nikolaevich. Cutting tool. 3,812,763, Cl. 90-11.00a.
Nester, Dianne L.: *See*—
Mason, Daniel W.; and Nester, Henry H., deceased, 3,813,295.
Nester, Henry H., deceased: *See*—
Mason, Daniel W.; and Nester, Henry H., deceased, 3,813,295.
Neta, Thomas E.: *See*—
Canfield, Robert C.; Neta, Thomas E.; and Wiesenborn, Robert F., 3,813,451.
Neubert, Terry C., to Goodyear Tire & Rubber Company, The. Preparation of resin encapsulated crumb rubber. 3,813,259, Cl. 117-100.00c.
New Age Minow and Tile Industries, Inc.: *See*—
Nausbaum, Irving, 3,812,748.
New York Wire Mills Corporation, mesne: *See*—
Nordgren, Alfred A., 3,813,512.

Newby, Ronald: *See—*
Lowen, Micharl David; and Newby, Ronald, 3,812,749.
Nickstadt, Gerhard, to General Electric Company. Reversing mechanism. 3,812,736, Cl. 74-404.000.
Nigg, Fritz; and Risse, Jean-Claude, to Tesa S.A. Electronic sensor. 3,812,590, Cl. 33-172.00e.
Nihon-Yohin Co., Ltd.: *See—*
Sato, Tomoyoshi, 3,812,604.
Nikaido, Akira; Nakajima, Fumio; Onda, Mitsuo; Machida, Takayasu; and Toida, Takashi, to Citizen Watch Company Limited. Converter drive circuit in an electronic timepiece. 3,812,670, Cl. 58-23.00r.
Nikles, Erwin: *See—*
Duerr, Dieter; and Nikles, Erwin, 3,813,436.
Nilsson, Bengt: *See—*
Englund, Hakan; Eriksson, Ronny; and Nilsson, Bengt, 3,812,721.
Nippon Air Brake Co., Ltd., The: *See—*
Takagi, Makoto, 3,812,874.
Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Hirano, Katsuhiko, 3,813,472.
Kurata, Yutaka; and Iwata, Motoji, 3,812,965.
Nippon Kakoh Seiski K.K.: *See—*
Katagiri, Keizo; Sakaguchi, Mamoru; and Kamata, Tokumaro, 3,813,278.
Nippon Kayaku Co., Ltd.: *See—*
Abe, Yasunori; Yamane, Nobuo; Itoh, Kensaku; Ishida, Shuichi; and Kobayashi, Hisabumi, 3,813,444.
Nippon Steel Corporation: *See—*
Kamogawa, Yoshiro; and Tuchiya, Takao, 3,812,693.
Nippondenso Co., Ltd.: *See—*
Yamaguchi, Terumoto, 3,812,576.
Nishikawa, Yukio; Nagao, Yoshio; Miyauchi, Yoshio; Mori, Noriaki; and Matsui, Shigenori, to Dainippon Screen Seizo Kabushiki-Kaisha. Photomechanical camera. 3,813,682, Cl. 354-211.000.
Nishiyama, Sumio: *See—*
Yoshioka, Tsuyoshi; and Nishiyama, Sumio, 3,812,993.
Nissan Motor Company, Limited: *See—*
Mori, Yoichi; Okazaki, Nobuo; Ohtsuka, Kunio; and Iijima, Tetsuya, 3,812,739.
Nissan Motor Company, Ltd.: *See—*
Seino, Hiroshi; Suzuno, Shingichi; Takeya, Yoshiaki; Tobita, Tsutomu; and Fukaya, Takeshi, 3,812,565.
Nisseki Plastic Chemical Co., Ltd., The: *See—*
Kamikawa, Kousaku; and Kawabe, Seikichi, 3,812,644.
Nissel, John Edward. Package orienting apparatus. 3,812,648, Cl. 53-124.00a.
Noble, Peter M., to Westinghouse Air Brake Company. Railway skate car retarder. 3,812,934, Cl. 188-62.000.
Noboru, Okubo: *See—*
Miyajima, Nobuo; Keneko, Kozo; Ohnuki, Iwao; and Noboru, Okubo, 3,813,088.
Nomiya, Kosei: *See—*
Hatsukano, Yoshikazu; Nomiya, Kosei; and Torii, Shuichi, 3,813,564.
Nomiya, Kosei; and Torii, Shuichi, to Hitachi, Ltd. Flip-flop circuit. 3,813,563, Cl. 307-279.000.
Nomiya, Kosei; and Tsuiki, Takao, to Hitachi, Ltd. Serial BCD adder. 3,813,623, Cl. 235-176.000.
Norba Aktiebolag: *See—*
Lindeborg, Georg D.; and Heine, Desire, 3,812,985.
Nordgren, Alfred A., to New York Wire Mills Corporation, mesne. Welding tip assembly. 3,813,512, Cl. 219-158.000.
Norman, Marvin Neil, to RCA Corporation. High voltage protection circuit. 3,813,580, Cl. 317-23.000.
Noroski, William J.: *See—*
Scott, Stanley J.; Noroski, William J.; and Rublack, Wilfred D., 3,813,568.
Northrop Corporation: *See—*
Loo, Brian Hum, 3,813,647.
Noryd, Nils Eric. Fastener assembly for handrails. 3,813,071, Cl. 248-251.000.
Nowak, George R. Photographic projection device. 3,813,160, Cl. 355-71.000.
Nowak, Matthew; and Tirellis, Gus George, to United States of America, Army. Optical ammunition inspection system and method. 3,813,174, Cl. 356-241.000.
Nuken, G.m.b.H.: *See—*
Krauth, Axel; and Muller, Norbert, 3,813,344.
Nygaard, James L., to Texas Instruments Incorporated. Automatic slice processing. 3,812,947, Cl. 198-19.000.
O'Brill, Robert. Frangible concrete-joint sealant package. 3,813,180, Cl. 404-48.000.
Occidental Energy Development Company, mesne: *See—*
Carr, Peter, 3,813,301.
O'Connell, William J., to General Electric Company. Polycarbonate molding composition comprising an aromatic polycarbonate graft copolymer and a modifier. 3,813,358, Cl. 260-16.000.
Office de Radiodiffusion-Television Francaise: *See—*
Blancheville, Pierre J.; Brun, Guy; and Dat, Pham Tat, 3,813,617.
Ogawa, Masahiro, to Toyota Jidosha Kogyo Kabushika Kaisha. Electrodeposition coating method. 3,813,323, Cl. 204-181.000.
Ohi, Reiichi: *See—*
Takamura, Yoshihiko; Nakajima, Yosuke; Ohi, Reiichi; and Miyazako, Takushi, 3,813,250.
Ohnuki, Iwao: *See—*
Miyajima, Nobuo; Keneko, Kozo; Ohnuki, Iwao; and Noboru, Okubo, 3,813,088.
Ohsuga, Shigeki: *See—*
Aya, Masahiro; Miyamoto, Masao; Fukawawa, Nobuo; and Ohsuga, Shigeki, 3,813,405.
Ohtsuka, Kunio: *See—*
Mori, Yoichi; Okazaki, Nobuo; Ohtsuka, Kunio; and Iijima, Tetsuya, 3,812,739.
Oka, Toshiichiro, to Victor Company of Japan, Ltd. Tape reciprocating drive type tape recorder. 3,813,690, Cl. 360-90.000.
Okazaki, Ichiro: *See—*
Shima, Shunji; Kadowaki, Hideyoshi; Muto, Eiji; Okazaki, Ichiro; and Matsumura, Koichi, 3,813,300.
Okazaki, Mitsunari, to Alps Electric Co., Ltd. Local oscillator for television tuner having reduced oscillation voltage variation between high and low frequency bands. 3,813,615, Cl. 331-109.000.
Okazaki, Nobuo: *See—*
Mori, Yoichi; Okazaki, Nobuo; Ohtsuka, Kunio; and Iijima, Tetsuya, 3,812,739.
OKI Electric Industry Co., Ltd.: *See—*
Yokokawa, Toshiki; and Kawakita, Chihiro, 3,813,508.
Oklahoma Tool & Supply Company: *See—*
Alger, Carl E., 3,813,081.
Okonogi, Itaru: *See—*
Tomita, Chuji; Kasai, Kazutomo; and Okonogi, Itaru, 3,813,227.
Okubo, Ko: *See—*
Kurosawa, Koichi; and Okubo, Ko, 3,813,483.
Okumura, Jun: *See—*
Naito, Takayuki; and Okumura, Jun, 3,813,376.
Naito, Takayuki; and Okumura, Jun, 3,813,390.
Naito, Takayuki; Okumura, Jun; and Kamachi, Hajime, 3,813,391.
Olivero, Oliviero, to International Standard Electric Corporation. Coaxial cable joint. 3,813,479, Cl. 174-88.00c.
Olofsson, Sven; and Tysk, Jan, to LKB Medical AB. Method and device for measuring the flow rate of an intermittent fluid flow. 3,812,714, Cl. 73-194.00r.
Olree, Adrian R.: *See—*
Mohr, Robert G.; and Olree, Adrian R., 3,813,073.
Olson, Verne A. Liquid dispensing apparatus. 3,813,008, Cl. 222-70.000.
Olson, Wayne L. Vibrating rock polisher. 3,812,625, Cl. 51-163.000.
Olszyk, Bernard John; and Fricklas, Richard Leon, to Johns-Manville Corporation. Bituminous roofing products and process. 3,813,280, Cl. 161-151.000.
Omnium de Prospective Industrielle S.A.: *See—*
Lefebvre, Michel S. M.; and Lapierre, Philippe D., 3,812,598.
Onda, Mitsuo: *See—*
Nikaido, Akira; Nakajima, Fumio; Onda, Mitsuo; Machida, Takayasu; and Toida, Takashi, 3,812,670.
Opsonar Organ Corporation, mesne: *See—*
Nelson, Carl S., Jr., 3,813,498.
Optical displacement indicator: *See—*
Mary, Donald J., 3,813,166.
Orem, Donald E.: *See—*
Lee, Henry B.; Orem, Donald E.; and Wycoff, Paul L., 3,812,728.
Oringer, Maurice Jules, to Sybron Corporation. Dental electrosurgical unit. 3,812,858, Cl. 128-303.140.
Orr, Richard L.: *See—*
Kivlen, John A.; Orr, Richard L.; Chwab, William H.; and Macindoe, George F., 3,812,663.
Osada, Chiaki: *See—*
Honjo, Satoru; Fukushima, Osamu; and Osada, Chiaki, 3,813,267.
Osbond, John Mervyn; and Wickens, James Charles, to Hoffmann-La Roche Inc. Chrysanthemic acid esters. 3,813,427, Cl. 260-468.00h.
Oshima, Akira; Tsuboshima, Kazuhiko; and Takahashi, Nobuhito, to Kohjin Co., Ltd. Process for preparing N-substituted acrylamides. 3,813,438, Cl. 260-561.00n.
Ostrom, Charles R. Mail box. 3,813,029, Cl. 232-17.000.
Otis, Nick C.: *See—*
Lerch, Adolph F.; Otis, Nick C.; and Montgomery, John D., 3,812,638.
Otsu, Ikuo: *See—*
Kikuchi, Makoto; Asano, Hiroaki; Otsu, Ikuo; and Saeki, Toyoaki, 3,812,623.
Owen, Ronald Charles, to Illinois Tool Works Inc. Extruded plastic container carrier. 3,813,123, Cl. 294-87.200.
Owens-Illinois, Inc.: *See—*
Mason, Daniel W.; and Nester, Henry H., deceased, 3,813,295.
Oxy Metal Finishing Corporation: *See—*
Clauss, Richard J., 3,812,566.
Packaging Corporation of America: *See—*
Misdom, Theodore H., Jr.; and Boyd, James W., 3,813,027.
Pagani, Girogio, to Snam Progetti, S.p.A. Process for the production of a reducing gas for blast furnace. 3,813,229, Cl. 48-196.00r.
Pagano, Ralph R. Form fitting coat construction. 3,812,540, Cl. 2-93.000.
Palachek, Charles V.; and Underhill, William K., Jr., to Textron Incorporated. Rotor blade shear reinforcement. 3,813,186, Cl. 416-226.000.
Palma, Giancarlo: *See—*
Gambaretto, Gian Paolo; Tlaamini, Gianpietro; and Palma, Giancarlo, 3,813,370.
Panagrossi, Ahmed: *See—*

Gilbert, John W.; and Panagrossi, Ahmed, 3,812,860.

Panhard, Jean, to Societe de Constructions Mecaniques Panhard & Levasser. Armored vehicles having a cooled engine. 3,812,906, Cl. 165-44.000.

Panici, James. Protection system for box car doors. 3,813,119, Cl. 292-122.000.

Pannullo, Louis A.: *See—*
Edwards, Harrison F.; and Pannullo, Louis A., 3,813,566.

Panzarino, Joseph N.: *See—*
Forker, Ray B., Jr.; and Panzarino, Joseph N., 3,813,232.

Parachem Corporation: *See—*
Anderson, Robert J., 3,813,466.

Parfomak, Walter; Anderson, Richard John; and Levine, Alfred, to Bendix Corporation, The. Condition warning memory circuit. 3,813,665, Cl. 340-248-a.

Parkhurst, Robert M.: *See—*
Lemma, Aklilu; Parkhurst, Robert M.; and Skinner, William A., Jr., 3,813,383.

Parson, Les, & Sons (Engineers) Limited: *See—*
Jones, Alan; and Bustard, John Shaw, 3,812,952.

Parsons, James W. Sander cleaner. 3,812,622, Cl. 51-5.000.

Partridge, Leslie W., to Burdick Corporation, The. Patient cord assembly. 3,812,845, Cl. 128-2.06r.

Pate Manufacturing Company: *See—*
Resech, Raymond W., 3,812,634.

Patel, Kiritkumar R., to Eaton Corporation. Centrifugal clutch. 3,812,944, Cl. 192-105.00b.

Paulik, Frank E.; Hershman, Arnold; Knox, Walter R.; and Roth, James F., to Monsanto Company. Production of monocarboxylic acids. 3,813,428, Cl. 260-532.000.

Pauly, Raymond W.: *See—*
Grant, Jon Halloran; and Pauly, Raymond W., 3,813,560.

Pavlovsky, Vladimir Petrovich: *See—*
Rogalsky, Anatoly Viktorovich; Markevich, Vitaly Mikhailovich; Kheifets, Georgy Naumovich; Zaichenko, Jury Leonidovich; Baburov, Valery Efremovich; Pavlovsky, Vladimir Petrovich; Golban, Eduard Vasilievich; Pechennik, Leonid Naumovich; Knyazhinsky, Zakhar sipovich; Bogatov, Nikolai Alexandrovich; Raichuk, Jury Isaakovich; Zaritsky, Vaktor Nikolaevich; and Grodzitsky, Evgeny Fedorovich, 3,812,909.

Payne, Roger A.: *See—*
Steckel, Elmer A.; Schaffer, William G.; and Payne, Roger A., 3,813,314.

Peabody Engineering Corporation: *See—*
Arnold, Orlan M.; and Vancini, Carlo A., 3,812,658.

Pechennik, Leonid Naumovich: *See—*
Rogalsky, Anatoly Viktorovich; Markevich, Vitaly Mikhailovich; Kheifets, Georgy Naumovich; Zaichenko, Jury Leonidovich; Baburov, Valery Efremovich; Pavlovsky, Vladimir Petrovich; Golban, Eduard Vasilievich; Pechennik, Leonid Naumovich; Knyazhinsky, Zakhar sipovich; Bogatov, Nikolai Alexandrovich; Raichuk, Jury Isaakovich; Zaritsky, Vaktor Nikolaevich; and Grodzitsky, Evgeny Fedorovich, 3,812,909.

Peddinghaus, Paul Carl. Bending machine for metal rods. 3,812,694, Cl. 72-21.000.

Pedershaab Maskinfabrik A/S: *See—*
Fisker, Jens Erik; and Sondergaard, Per, 3,813,203.

Peetz, Dieter: *See—*
Jochim, Friedrich; Peetz, Dieter; Karla, Heinz; and Luerssen, Hermann, 3,813,519.

Pellegrino, Thomas P.: *See—*
Kufner, Kenneth L.; Pellegrino, Thomas P.; and Chmela, Frank P., 3,812,569.

Pelletier, Simon, to Dionite Luggage Inc. Soft sided hand luggage. 3,812,939, Cl. 190-49.000.

Peltier, Guy: *See—*
Guerin, Daniel L. G., 3,813,014.

Pembrook, John D.: *See—*
Burch, Darrell E.; Gates, Francis J.; Gryvnak, David A.; and Pembrook, John D., 3,813,146.

Pennar, Leonard J. Means for moving a television screen. 3,813,491, Cl. 178-7.810.

Pennwalt Corporation: *See—*
Shapiro, Leonard, 3,812,564.

Perilhou, Jean Robert; and Auphan, Michel Joseph, to U.S. Philips Corporation. Oven. 3,812,597, Cl. 34-105.000.

Perkins, Dale M. Electrical locking alarm system. 3,813,663, Cl. 340-274.000.

Perry, Dale C., to Goodyear Tire & Rubber Company, The. Polymerization of conjugated diolefins with catalysts containing carbon oxysulfide. 3,813,374, Cl. 260-94.300.

Perry, Ernest John: *See—*
Hollister, Kenneth Robert; and Perry, Ernest John, 3,813,251.

Peter, Joseph E., to Wolf Machine Company, The, mesne. Safety guard for a cloth cutting machine. 3,812,584, Cl. 30-273.000.

Peters, Ronald L. Disposable electrode. 3,812,861, Cl. 128-418.000.

Petigara, Ramesh B.: *See—*
Yale, Harry L.; and Petigara, Ramesh B., 3,813,396.

Petitclerc, Jean C.: *See—*
Benoiton, Norman L.; Tong, Jeffrey H. Y.; D'Iorio, Antoine; and Petitclerc, Jean C., 3,813,317.

Petrolite Corporation: *See—*
Turner, Delber W., 3,813,328.

Petrusek, Victor. Toy glider. 3,812,612, Cl. 46-79.000.

Petty-Ray Geophysical, Inc.: *See—*
Wilkes, Don Earl; Thompson, Charles Larry; and Sedgwick, Alan Fred, 3,813,609.

Pfirrmann, Rolf Wilheim; and Hofstetter, Emil, to Ed. Geistlich Sohne A.G. fur Chemische Industrie. Sulphamoylphenyl pyrrolidinones. 3,813,387, Cl. 260-239.600.

Philco-Ford Corporation: *See—*
Burch, Darrell E.; Gates, Francis J.; Gryvnak, David A.; and Pembrook, John D., 3,813,146.

Phillip Morris Incorporated: *See—*
Gergely, Alex S., 3,813,200.

Phillips, Donald K., to Sterling Drug Inc. 1-Aryl-2-alkyl or -alkenyl-3,4-dihydronaphthalenes. 3,813,430, Cl. 260-479.00r.

Phillips Petroleum Company: *See—*
Shofner, Don L.; and Alexander, Doyle L., 3,813,212.

Phillips, Wendell Gary, to Monsanto Company. S, S-2-Chloroalkyl thioperoxyoxamates and their manufacture. 3,813,426, Cl. 260-453.00r.

Picard, Jean P.; Satriana, Daniel R.; and Masuelli, Frank J., to United States of America, Army. Process for preparation of triaminoguanidine and its salts. 3,813,439, Cl. 260-564.00f.

Pickford, Holland & Company Limited: *See—*
Shaw, Gordon Brian, 3,813,468.

Pickrell, John W. Readily detachable water ski towline pay-out and retrieval apparatus. 3,813,055, Cl. 242-86.50a.

Pieper, Helmut; and Tober, Gustav, to Vereinigte Flugtechnische Werke-Fokker Gesellschaft mit beschrankter Haftung. Method for evaporating silver on titanium and its alloys. 3,813,258, Cl. 117-71.00m.

Pierce, Bernard N., to Merrow Machine Company, The. Sewing machine noise and vibration reduction. 3,812,802, Cl. 112-218.00r.

Pike, John E.; and Schneider, William P., to Upjohn Company, The. 16-Methyl and ethyl PGE, and 16,16 dimethyl and diethyl. 3,813,433, Cl. 260-514.00d.

Pillsbury Company, The: *See—*
Bertling, Rudolph B.; and Kerr, Edward R., 3,812,647.

Pimsleur, Joel L. Camera holster. 3,813,017, Cl. 224-26.00r.

Pioli, Alexander Joseph Peter; Hollyhead, William Brian; and Todd, Peter Frank, to Imperial Chemical Industries, Limited. Organometallic compounds and uses thereof. 3,813,423, Cl. 260-429.300.

Pioneer Electronic Corporation: *See—*
Miki, Yasuhiro; and Kumanogo, Tadaki, 3,813,284.

Pipe Machinery Company, The: *See—*
Theuerkaue, Fred, 3,812,548.

Pitner, Alfred, 1/2 to Nadella. Radial needle bearing assembly. 3,813,136, Cl. 308-213.000.

Pitzer, Robert L., to Edclif Instruments. Accelerometer. 3,812,727, Cl. 73-516.00r.

Plank, Charles J.: *See—*
Givens, Edwin N.; Plank, Charles J.; and Rosinski, Edward J., 3,813,330.

Plantif, Bernard: *See—*
Doin, Bernard; and Plantif, Bernard, 3,813,007.

Pleshko, Peter: *See—*
Krick, Paul John; and Pleshko, Peter, 3,813,558.

Plura, Georg, to Steinmuller, L. & C., G.m.b.H. Method of treating fluid in a continuous manner. 3,813,333, Cl. 210-33.000.

Pneumatic Scale Corporation: *See—*
Vergobbi, Robert W., 3,812,643.

Pohlig-Heckel-Bleichert Vereinigte Maschinenfabriken Aktiengesellschaft: *See—*
Kling, Georg, 3,812,787.

Pohndorf, Henry L.: *See—*
Bird, Forrest M.; and Pohndorf, Henry L., 3,812,878.

Poindexter, William E.: *See—*
Merrell, Kenneth C.; Scott, Timothy F.; Brushwyler, Gordon R.; Koegel, James H.; and Poindexter, William E., 3,813,325.

Polasek, Emil. Jar opener. 3,812,742, Cl. 81-33.320.

Polcer, John; Barratt, Robert O.; and Roberts, John, to Foster Wheeler Corporation and General Electric Company. Sodium-heated steam generator. 3,812,824, Cl. 122-32.000.

Polcer, John; Barratt, Robert O.; and Roberts, John, to Foster Wheeler Corporation and General Electric Company. Sodium heated helical coil arrangement. 3,812,825, Cl. 122-34.000.

Pollak, Robert J.: *See—*
Kemnitz, Robert H.; and Pollak, Robert J., 3,813,046.

Polysius AG: *See—*
Greiffenstern, Karl Von, 3,813,045.

Poma 2. 000 S.A., mesne: *See—*
Laurent, Roger, 3,812,788.

Porret, Daniel: *See—*
Habermeier, Jurgen; Porret, Daniel; and Baumann, Dieter, 3,813,352.

Potin, Marcel, to Societe Financiere Francaise de Licences et Brevets. Process for making the stops of a slide fastener. 3,813,459, Cl. 264-23.000.

Potter, Harland C.: *See—*
Wieken, Robert H.; and Potter, Harland C., 3,812,797.

Potter Instrument Company, Inc.: *See—*
Potter, John T., 3,813,492.

Potter, John T., to Potter Instrument Company, Inc. Copier system. 3,813,492, Cl. 178-30.000.

Potter, Ronald D., to Auto-Place, Inc. Double-reach attachment for lifting and swinging work-transfer device. 3,812,981, Cl. 214-1.0bb.

Potts, Vinson S.: *See—*
Kneusel, Raymond H. P.; and Potts, Vinson S., 3,812,696.

Powell, Richard G.: *See—*
Kolb, John P.; and Powell, Richard G., 3,812,980.

Pozolo, Kenneth R.: *See—*
Herbenar, Edward J.; and Pozolo, Kenneth R., 3,813,178.

PPG Industries, Inc.: *See—*
Cook, Richard S., 3,813,225.
Gunby, Leslie, 3,813,326.
Makhlouf, Joseph M., 3,813,254.

Prather, Alfred G. B. Fan-like tail section for man-powered glider aircraft. 3,813,062, Cl. 244-16.000.

Precision Metalsmiths, Inc.: *See—*
Horton, Robert A., 3,812,898.

Prescott, Robert C., to Foxboro Company, The. Planar pressure-responsive elements. 3,812,767, Cl. 92-48.000.

Prezewowsky, Klaus: *See—*
Hofmeister, Helmut; Laurent, Henry; Prezewowsky, Klaus; and Wiechert, Rudolf, 3,813,418.

Priaroggia, Paolo Gazzana, to Industrie Pirelli Societa per Azioni. Underwater oil-filled electrical cable installation with means locally supporting the cable above the bed of the water. 3,813,476, Cl. 174-37.000.

Price, Ralph E.: *See—*
Gebel, Kurt M.; and Price, Ralph E., 3,812,627.

Priem, Jan Jozef: *See—*
Mannens, Marc Godfried; Jaeken, Jan; Janssens, Wilhelmus; and Priem, Jan Jozef, 3,813,255.

Priest, Charles E., to Alum Elec Structures, Inc. Structures formed from structural members. 3,813,179, Cl. 403-348.000.

Pringle, William L., to United States Steel Corporation, mesne. Disc brake wear take up device. 3,812,935, Cl. 188-71.800.

Prinzhorn, Klaus, to Kabel- und Metallwerke Gutehoffnungschutte Aktiengesellschaft. Method of preparing two wave guides of differing cross section for interconnection. 3,812,578, Cl. 29-600.000.

Pritomanov, Alexei Evgenievich: *See—*
Drobich, Oleg Pavlovich; Pritomanov, Alexei Evgenievich; Rokutov, Viktor Petrovich; Kirvalidze, Nikolai Spiridonovich; Gerzmava, Dusheli Vladimirovich; and Mandzjuk, Boris Valentinovich, 3,813,335.

Procter & Gamble Company, The: *See—*
Duncan, Robert Campbell; and Kokx, Darrel Dayfield, 3,812,856.
Wolfson, Alan B., 3,813,349.

Products Research & Chemical Corporation: *See—*
Laird, John E., 3,813,012.

Progil: *See—*
Masotti, Robert; Rieux, Jean-Philippe; Borrel, Philippe; and Lehureau, Jean, 3,813,282.

Proni, Oscar; and Bull, Brian S., to Coulter Electronics, Inc. Hematocrit tube measuring apparatus. 3,812,707, Cl. 73-61.400.

Proudian, Andrew P., to Xonics, Inc. Process of making a subtracted image radiographic record. 3,813,546, Cl. 250-315.000.

Pryor, Harold A.: *See—*
Pryor, Roy R.; and Pryor, Harold A., 3,813,038.

Pryor, Roy R.; and Pryor, Harold A. Railroad tie. 3,813,038, Cl. 238-37.000.

Pshenichny, Gennady Ivanovich; Checheljuk, Yakov Zinovievich; and Gryazev, Ivan Ivanovich. Stand for assembling and pressing magnetic circuits of power transformers. 3,812,567, Cl. 29-203.00d.

Pugliese, Paul Jones: *See—*
Falletta, Thomas S.; and Pugliese, Paul Jones, 3,812,960.

Purdy, Haydn V.; and McIntosh, Ronald C. Character matrices for phototypesetters. 3,813,683, Cl. 354-292.000.

Puster, Louis M.: *See—*
Lewis, Jay L.; Puster, Louis M.; and Brakebill, Harold G., 3,813,034.

Pyle, John A. Boat transporting, launching and retrieving trailer. 3,812,988, Cl. 214-505.000.

Quaker Oats Company, The: *See—*
Bozer, Keith B.; and Brown, Lloyd H., 3,813,371.

Quarmby, David John, to Erni Limited. Pattern recognition devices. 3,813,646, Cl. 340-146.3ae.

Quemerais, Philippe, to Regie Nationale des Usines Renault and Automobiles Peugeot. Cam operated friction clutch. 3,812,943, Cl. 192-93.00a.

Radobenko, William, to Automated Equipment Corporation. Wire bonder apparatus. 3,813,022, Cl. 228-3.000.

Ragland, Douglas, to Ragland Manufacturing and Construction Company. Adjustable door frame assembly. 3,812,621, Cl. 49-505.000.

Ragland Manufacturing and Construction Company: *See—*
Ragland, Douglas, 3,812,621.

Rahdener Maschinenfabrik August Kolbus: *See—*
Taupin, Jean Marie, 3,813,093.

Raichuk, Jury Isaakovich: *See—*
Rogalsky, Anatoly Viktorovich; Markevich, Vitaly Mikhailovich; Kheifets, Georgy Naumovich; Zaichenko, Jury Leonidovich; Baburov, Valery Efremovich; Pavlovsky, Vladimir Petrovich; Golban, Eduard Vasilievich; Pechennik, Leonid Naumovich; Knyazhinsky, Zakhar sipovich; Bogatov, Nikolai Alexandrovich; Raichuk, Jury Isaakovich; Zaritsky, Vaktor Nikolaevich; and Grodzitsky, Evgeny Fedorovich, 3,812,909.

Ramey, Robert M., to Teledyne, Inc. Gas fired patio heater with a manual igniter. 3,813,207, Cl. 431-255.000.

Ramsay, James D.: *See—*
Teach, Ted L.; and Ramsay, James D., 3,813,171.

Ramsay, Melvin Murray; Barnes, William Geddes; and Bedgood, Michael Albert, to International Standard Electric Corporation. Low light television camera. 3,813,489, Cl. 178-7.200.

Ramsdale, Roy, to Clark, Alex L., Limited. Reel for photographic sheet material. 3,813,684, Cl. 354-341.000.

Rankin, Malcolm: *See—*
Abbott, William J.; and Rankin, Malcolm, 3,812,937.

Ransburg Corporation: *See—*
Lee, Henry B.; Orem, Donald E.; and Wycoff, Paul L., 3,812,728.

Ratkowski, Thomas A., to Abex Corporation. Dipper bucket corner member with integral shroud. 3,812,608, Cl. 37-141.00t.

Ratts, Kenneth Wayne: *See—*
Wood, Alvin P.; and Ratts, Kenneth Wayne, 3,813,435.

Ray, Robert L.; Champeau, William J.; and Mc Atee, Kerry D., to Dayco Corporation. Apparatus for making an endless power transmission belt. 3,813,197, Cl. 425-111.000.

Raye, Alexander H.: *See—*
Jones, Charles; and Raye, Alexander H., 3,812,574.

Raypak, Inc.: *See—*
Block, Leo; Ashton, Larry J.; and Vodraska, Kenneth F., 3,812,872.

Raznov, Jerry L., to Ametek, Inc. Time and altitude sensing release mechanism. 3,813,066, Cl. 244-150.000.

RCA Corporation: *See—*
Caprari, Fausto, 3,813,576.
Cavett, John Dill; and Hopkins, Robert Sherman, Jr., 3,813,488.
Hulls, Leonard Robin, 3,813,596.
Norman, Marvin Neil, 3,813,580.
Sheng, Abel Ching Nam, 3,813,595.
Watson, James Power, 3,813,678.

Reactor Centrum Nederland (Stichting): *See—*
Wijnant, Petrus Leo Clemens; and Louwaard, Richardus Theodorus Gerardus, 3,813,134.

Reade, Richard F., to Corning Glass Works. Method of making glass-ceramic articles. 3,812,689, Cl. 65-33.000.

Reardon, Michael J.: *See—*
Droege, Lee John; Reardon, Michael J.; and Wilhite, Alan Roy, 3,813,310.

Reed, Samuel F., Jr., to United States of America, Army, mesne. Propellants containing copolymers of dienes and polymerizable ferrocene or carborane compounds. 3,813,304, Cl. 149-19.200.

Reed, Samuel F., Jr., to United States of America, Army, mesne. Propellant composition using carboxy-terminated copolymers of butadiene and ferrocene derivatives. 3,813,306, Cl. 149-19.900.

Reegen, Sidney: *See—*
Frisch, Kurt C.; Reegen, Sidney; and Dieter, Jerry A., 3,813,365.

Reflect-O-Lite Manufacturing Company: *See—*
Freeman, Jerry H., 3,813,535.

Reggio, Antonino: *See—*
Losco, Giuseppe; Reggio, Antonino; Michieli, Giannantonio; and Longoni, Angelo, 3,813,440.

Regie Nationale des Usines Renault: *See—*
Quemerais, Philippe, 3,812,943.

Reich, James F. Toolholder with tinerchangeable inserts for a tangent chaser. 3,812,547, Cl. 10-101.000.

Reiff, Louis P.: *See—*
Aaron, Herbert S.; and Reiff, Louis P., 3,813,403.

Reiland, Bernard F., to Textron, Inc. Threaded fastener with torque control head. 3,812,757, Cl. 85-61.000.

Reiman, Reuben H. Corrective foot splint. 3,812,850, Cl. 128-80.00a.

Reindl, Adole, to United States of America, Army. Digital transmission system. 3,813,601, Cl. 325-141.000.

Remane, Roger, to Application des Gaz. Method of filling containers with pressurized fluid and closing by means of a discharge valve assembly. 3,812,645, Cl. 53-37.000.

Reminton, Richard C. Axial motion magnetically actuated switch. 3,813,622, Cl. 335-151.000.

Rempel, Robert Henry. Rack. 3,812,976, Cl. 211-60.00t.

Remy, Ernst: *See—*
Franzen, G.; Hillenkamp, Franz; Kaufman, Raimund; and Remy, Ernst, 3,813,544.

Resech, Raymond W., to Pate Manufacturing Company. Flashing base with adjustable cant. 3,812,634, Cl. 52-741.000.

Reuter, Alfred, to Gebruder Linck. Tool heads for use in machining timber. 3,812,891, Cl. 144-3.00r.

Revenig, Howard C.: *See—*
Hallesy, Harold W.; and Revenig, Howard C., 3,813,065.

Rexnord Inc.: *See—*
Strehlow, Robert W., 3,812,889.
Von Tresckow, Hans-Udo; and Davis, Calvin R., 3,812,790.

Rexon Electronics, Inc.: *See—*
Stuart, Richard L., 3,813,598.

Rexroth, G. L., GmbH: *See—*
Scholz, Joerg, 3,813,194.

Reynolds Metals Company: *See—*
Adams, Harold W., 3,813,481.

Rich, Edward, Jr.: *See—*
Charlton, Walter T., 3,813,659.

Rich, Edward, Jr., 1/2 to Charlton, Walter F. Movable-object identification system. 3,813,658, Cl. 340-146.30k.

Richmond, Robert C.: *See—*
Higgs, Kenneth O.; Richmond, Robert C.; and Marsch, Lawrence F., 3,812,706.

Rick, Michael Edward, to Sybron Corporation. Dental apparatus. 3,813,147, Cl. 297-191.000.

Ricoh Co., Ltd.: *See—*
Kobayashi, Yugoro, 3,813,163.
Yanagawa, Nobuyuki, 3,812,730.
Yanagawa, Nobuyuki, 3,812,941.

Ridder, Hubert; Epping, Winfried; and Icking, Paul, to Gebr. Schmeing. Device for supplying fluid feed into feeders. 3,812,823, Cl. 119-54.000.

Rieux, Jean-Philippe: *See—*
Masotti, Robert; Rieux, Jean-Philippe; Borrel, Philippe; and Lehureau, Jean, 3,813,282.

Riggs, Robert S., to Goodyear Tire & Rubber Company, The. Belt building drum. 3,813,271, Cl. 156-417.000.

Rinehart, Dean C., to General Electric Company. Rotary compressor including means for reducing vane slot wear. 3,813,193, Cl. 418-63.000.

Ring, Charles M., to Motorola, Inc. Efficient power darlington device configuration. 3,813,588, Cl. 317-235.00r.

Ringland, William L.: *See—*
Rockwell, Harvey W.; and Ringland, William L., 3,812,928.

Rinnai Kabushiki Kaisha: *See—*
Takase, Tadayoshi, 3,812,837.

Ripka, Josef: *See—*
Marsalek, Milan; Junek, Jan; Brynda, Vaclav; Burysek, Frantisek; Hortlik, Frantisek; Ripka, Josef; and Lanta, Jiri, 3,812,667.

Risdon Manufacturing Company, The: *See—*
Kotuby, Paul M.; and Velicka, Alvydas, 3,813,013.

Risley, James A. Flush tank water saver. 3,812,544, Cl. 4-18.000.

Risse, Jean, to Colortex S.A. Fluid propeller. 3,813,083, Cl. 259-8.000.

Risse, Jean-Claude: *See—*
Nigg, Fritz; and Risse, Jean-Claude, 3,812,590.

Ritter, Edmond Jean: *See—*
Kelly, Ralph; and Ritter, Edmond Jean, 3,813,350.

Rives, George S.: *See—*
Wootten, John A.; and Rives, George S., 3,812,843.

Robbins, Robert: *See—*
Williams, Heyward Sturges; and Robbins, Robert, 3,813,561.

Roberts, Arthur H. Process for the manufacture of molded articles. 3,813,462, Cl. 264-45.000.

Roberts, John: *See—*
Polcer, John; Barratt, Robert O.; and Roberts, John, 3,812,824.
Polcer, John; Barratt, Robert O.; and Roberts, John, 3,812,825.

Roberts, Walter L., to Superior Continental Corporation. Alarm system utilizing telephone talking pairs. 3,813,500, Cl. 179-175.20c.

Robertshaw Controls Company: *See—*
Branson, Charles D.; and Genbauffe, Francis S., 3,813,078.
Caparone, Michael J., 3,813,033.
Cetola, Henry A.; and Crosby, Timothy J., 3,813,626.
Lewis, Jay L.; Puster, Louis M.; and Brakebill, Harold G., 3,813,034.
Merrell, Kenneth C.; Scott, Timothy F.; Brushwyler, Gordon R.; Koegel, James H.; and Poindexter, William E., 3,813,325.
Shopsky, Harvey J., 3,812,718.
Shopsky, Harvey J., 3,812,719.
Shopsky, Harvey J., 3,812,720.

Robertson, H. H., Company: *See—*
Albrecht, Raymond E.; Curran, Bernard E.; and Lindner, Robert G., 3,812,636.

Robertson, Robert C.; and Francis, G. V. Dome structure. 3,812,632, Cl. 52-81.000.

Robinson, David Arthur Hall: *See—*
Miller, Gabriel Lorimer; and Robinson, David Arthur Hall, 3,812,717.

Roblin Industries, Inc.: *See—*
Ruger, Verlyn C., 3,813,111.

Roch, Gerald V., to Hurco Manufacturing Company, Inc. Back gauge for press brake. 3,812,695, Cl. 72-36.000.

Rock, Frank C., to National Controls, Inc. Weight display system and method. 3,812,923, Cl. 177-1.000.

Rockwell, Harvey W.; and Ringland, William L., to Allis-Chalmers Corporation. Electric powered wheel. 3,812,928, Cl. 180-65.00f.

Rodriguez, Bernard. Rope retaining cleat with automatic release. 3,812,811, Cl. 114-218.000.

Rodriguez, Paul L. Method for locating blood vessels for catheterization. 3,812,842, Cl. 128-2.00a.

Rodriguez, Paul L. I.V. arm rest and support. 3,812,851, Cl. 128-133.000.

Roe, Clyde B.: *See—*
Kinkade, William A.; and Roe, Clyde B., 3,813,312.

Roes, John B., to Metrolab, Inc.; a subsidiary of Cubic Corporation. Method of manufacturing magnetic drum memory apparatus. 3,812,579, Cl. 29-603.000.

Rogalsky, Anatoly Viktorovich; Markevich, Vitaly Mikhailovich; Kheifets, Georgy Naumovich; Zaichenko, Jury Leonidovich; Baburov, Valery Efremovich; Pavlovsky, Vladimir Petrovich; Golban, Eduard Vasilievich; Pechennik, Leonid Naumovich; Knyazhinsky, Zakhar sipovich; Bogatov, Nikolai Alexandrovich; Raichuk, Jury Isaakovich; Zaritsky, Vaktor Nikolaevich; and Grodzitsky, Evgeny Fedorovich. Apparatus for heating and cooling long cylindrical parts. 3,812,909, Cl. 165-120.000.

Rogers, Jack. Portable valve seat facer. 3,812,628, Cl. 51-241.0vs.

Rogers, Kenneth Mathew. Method and device for controlling a multiposition valve. 3,813,080, Cl. 251-285.000.

Rogers, Richard L., to Texas Royal Manufacturing Company. Boat trailer. 3,812,986, Cl. 214-84.000.

Rogne, Conrad O., Jr.; and Grant, Robert A., to Bendix Corporation, The. Continuously operable underground mining vehicle. 3,813,126, Cl. 299-33.000.

Rohm & Haas Company: *See—*
Clemens, David H.; and Lange, Raymond J., 3,813,353.
Sioma, Edward M., 3,813,539.

Rokutov, Viktor Petrovich: *See—*
Drobich, Oleg Pavlovich; Pritomanov, Alexei Evgenievich; Rokutov, Viktor Petrovich; Kirvalidze, Nikolai Spiridonovich; Gerzmava, Dusheli Vladimirovich; and Mandzjuk, Boris Valentinovich, 3,813,335.

Rolak, Hanna: *See—*
Kycia, Henryk; Chmielewska, Danuta; Rolak, Hanna; Michno, Zbigniew; Zaniuk, Jan; Surgiewicz, Janusz; Stefaniak, Ferdynand; Lenkowski, Przemyslaw; and Kobosko, Anna, 3,813,415.

Roland, David H.; and Hastings, Edward D., to Jones, J. A., Construction Company. Crane safety barrier. 3,812,978, Cl. 213-1.000.

Roland, David H., to Jones, J. A., Construction Company. Safety prop for dump truck bodies. 3,813,124, Cl. 298-17.00b.

Rolm Corporation: *See—*
Smith, John I.; and McKinley, William R., 3,813,653.

Rondello, William R. Modular chart. 3,812,600, Cl. 35-7.00r.

Ronneberg, Henning. Machine for application for adhesive or other liquid. 3,812,820, Cl. 118-3.000.

Rosenberg, Robert: *See—*
DiStefano, Thomas H.; Laibowitz, Robert B.; and Rosenberg, Robert, 3,813,549.

Rosenberg, Robert, to International Business Machines Corporation. Method for reducing electromigration damage at metal interfaces. 3,813,263, Cl. 117-201.000.

Rosenberger, Michael: *See—*
Cohen, Noal; Rosenberger, Michael; and Saucy, Gabriel, 3,813,417.

Rosenblum, Jesse. Liquid filter and method for fabricating same. 3,812,972, Cl. 210-489.000.

Rosinski, Edward J.: *See—*
Givens, Edwin N.; Plank, Charles J.; and Rosinski, Edward J., 3,813,330.

Ross, Donald, to Automatic Timing & Controls, Inc. Analog to digital converter employing grooved disc. 3,813,668, Cl. 340-347.00p.

Ross, Thomas J.: *See—*
Moe, James A.; and Ross, Thomas J., 3,813,005.

Rossler, Willi, to Tonwaren- und Porzellanfabrik Rossler AG. Automatic production plant for forming workpieces. 3,813,202, Cl. 425-404.000.

Roth, James F.: *See—*
Paulik, Frank E.; Hershman, Arnold; Knox, Walter R.; and Roth, James F., 3,813,428.

Roth, Johann, to Braun Aktiengesellschaft. Motion-picture apparatus capable of generating an electrical synchronizing signal for the snychronization of a sound track. 3,813,153, Cl. 352-12.000.

Rothenberger, Hansjorg. Handheld applicator for adhesive tape. 3,813,274, Cl. 156-527.000.

Rowe, D. Garth: *See—*
Goldman, Arthur J.; Rowe, D. Garth; and Jones, Cecil Roy, 3,813,286.

Rowley, Edward Kenneth: *See—*
Barnes, John Grober; Bizon, Emil; Murray, Charles Robertson; Rowley, Edward Kenneth; and Waugh, Clayton Thomas, 3,812,769.

Rublack, Wilfred D.: *See—*
Scott, Stanley J.; Noroski, William J.; and Rublack, Wilfred D., 3,813,568.

Rucker Company, The: *See—*
Doyle, Richard C.; Wahlgren, Wallace W.; and Douglas, Ellwood S., 3,813,579.

Rudszinat, Willy; and Ludszeweit, Dieter, to Hauni-Werke Korber & Co. KG. Method of transporting cigarettes or the like. 3,812,950, Cl. 198-31.0aa.

Rudzinski, Stanley P. Screening and comminuting device. 3,812,967, Cl. 210-174.000.

Ruemmele, Werner A. Tunnel lining and method of applying. 3,812,679, Cl. 61-42.000.

Ruger, Verlyn C., to Roblin Industries, Inc. Bumper construction for shopping cart. 3,813,111, Cl. 280-33.99r.

Russ, John C.: *See—*
Barnhart, Morris W.; and Russ, John C., 3,813,545.

Russell, David S.: *See—*
Hughes, Patrick A.; and Russell, David S., 3,813,493.

Rutz, Hans; and Gubler, Kurt, to Ciba-Geigy Corporation. Herbicidal aliphatic oxa alkyl-2,4,5-trihalogeno-imidazoles. 3,813,235, Cl. 71-92.000.

Ryberg, Arlen W., to Honeywell Information Systems Inc. Stepping motor acceleration and deceleration control. 3,813,592, Cl. 318-696.000.

Ryers, Arnold L., to Allied Chemical Corporation. Method of dissolving spent nuclear fuel. 3,813,464, Cl. 423-20.000.

Saari, Oliver Edward, to Illinois Tool Works Inc. Apparatus for forming epitrochoidal surfaces. 3,812,746, Cl. 82-18.000.

Saeki, Toyoaki: *See—*
Kikuchi, Makoto; Asano, Hiroaki; Otsu, Ikuo; and Saeki, Toyoaki, 3,812,623.

S.A.E.S. Getters S.p.A.: *See—*

delle Porta, Paolo; Giorgi, Tiziano; Kindl, Bruno; and Zucchinelli, Mario, 3,813,266.

Sahara, Masayoshi, to Minolta Camera Kabushiki Kaisha. Motor driven photographic camera. 3,813,681, Cl. 354-173.000.

Sahm, Bernd, to Wilhelm Will KG, Firma. Dovetail guide. 3,813,132, Cl. 308-3.00a.

Saifer, Mark G.: *See—*
Huber, Wolfgang; Chow, Silver H.; and Saifer, Mark G., 3,813,289.

Saito, Yosushi: *See—*
Matsuda, Youichi; Suzuki, Hiroshi; Shito, Nobuhiko; and Saito, Yosushi, 3,813,631.

Sajben, Johannes Otto; Lippert, Axel; Stumpen, Klaus; and Grunewald, Rainer, to Bayer Aktiengesellschaft. Reinforced synthetic plastic pipe. 3,812,885, Cl. 138-125.000.

Sakaguchi, Mamoru: *See—*
Katagiri, Keizo; Sakaguchi, Mamoru; and Kamata, Tokumaro, 3,813,278.

Sakamoto, Yoshio; and Iguchi, Shinsuke, to Hitachi, Ltd. Transistor circuit. 3,813,606, Cl. 330-13.000.

Sakumoto, Hideki; Namoto, Yoshiteru; Ushihara, Masaharu; Tanigawa, Shizuhiko; and Kanda, Shozo, to Matsushita Electric Industrial Co., Ltd. Reel mount elevating machanism. 3,813,057, Cl. 242-198.000.

Salmon, David; Weirzbicke, Edward J.; Langston, Benny; and Beegle, Donald W., to U. S. Reduction Company. Mechanical puddler. 3,813,238, Cl. 75-93.00r.

Salmon, Paul Mervyn, to Adams, William, & Company Limited (Manufacturing Division). Cringle assembly. 3,812,809, Cl. 114-114.000.

Salomon, Georges Pierre Joseph. Device for securing a boot to a ski. 3,813,109, Cl. 280-11.35y.

Saltman, William M.; and Auerbach, Melvin, to Goodyear Tire & Rubber Company. Process for increasing molecular weight of live polymers. 3,813,455, Cl. 260-879.000.

Samsing, Rolf, A., to Gillette Company, The and Carton for plurality of containers. . 3,812,958, Cl. 204-45.310.

Sandrock, Heinrich K.: *See—*
Dolby, Dale P.; and Sandrock, Heinrich K., 3,813,688.

Sandy, Richard E.: *See—*
Schriever, Richard L.; Johansen, Harold R.; and Sandy, Richard E., 3,813,612.

Sankyo Kogaku Kogyo Kabushiki Kaisha: *See—*
Fujishige, Sadao, 3,813,154.

Sargent Industries, Inc.: *See—*
Smith, Fred T., 3,812,676.

Sarracino, Marcello, to Industrie Pirelli Societa per Azioni. Double-trist stranding or cabling machine. 3,812,666, Cl. 57-58.520.

Saruwatari, Shigeto, to Matsushita Electric Industrial Co., Ltd. Indicator device. 3,812,818, Cl. 116-124.100.

Sato, Hisanao: *See—*
Ikeda, Mitsusuke; Sato, Hisanao; Torii, Etsuko; Morimoto, Kazuhisa; and Hasegawa, Yo, 3,813,242.

Sato, Kohei, to Matsushita Electric Industrial Co., Ltd. High voltage transformer device in a horizontal deflection circuit. 3,813,574, Cl. 315-29.000.

Sato, Tatsuo; and Takimoto, Shingo, to Shimadzu Seisakusho Ltd. Method and apparatus for integrating the output of a measuring instrument. 3,813,532, Cl. 235-183.000.

Sato, Tomoyoshi, to Nihon-Yohin Co., Ltd. Shoe construction and method of manufacturing a shoe. 3,812,604, Cl. 36-14.000.

Satriana, Daniel R.: *See—*
Picard, Jean P.; Satriana, Daniel R.; and Masuelli, Frank J., 3,813,439.

Saucy, Gabriel: *See—*
Cohen, Noal; Rosenberger, Michael; and Saucy, Gabriel, 3,813,417.

Saucy, Gabriel, to Hoffmann-La Roche Inc. Process for isoxazolyl lactones. 3,813,411, Cl. 260-307.00h.

Saunders Archery Co.: *See—*
Saunders, Charles A., 3,812,834.

Saunders, Charles A., to Saunders Archery Co. Slingshot assembly. 3,812,834, Cl. 124-20.00r.

Saunders, John Christopher: *See—*
Boyle, John Terence Arnoit; and Saunders, John Christopher, 3,813,400.

Saunders, Leonard Thomas, to Kidde, Walter, & Company, Inc. Frequency filter circuit apparatus. 3,813,669, Cl. 343-5.0pd.

Savage, Basil W. Tree shaker with tree embracing clamp 3,812,662, Cl. 56-328.0ts.

Scanning Systems, Inc.: *See—*
Cowan, John Vincent; Cowan, Gerald DeG.; and Cowan, John Gerald, 3,812,708.

Schaefer, Erich: *See—*
Wanner, Max; and Schaefer, Erich, 3,812,983.

Schaffer, William G.: *See—*
Steckel, Elmer A.; Schaffer, William G.; and Payne, Roger A., 3,813,314.

Schampers, Paulus Phillippus Maria: *See—*
Boonstra, Alexander Hendrik; and Schampers, Paulus Phillippus Maria, 3,813,292.

Scheets, David F., to United States of America, Navy. System for measuring range to an electromagnetic radiation source. 3,813,671, Cl. 343-112.00d.

Scheffler, Gerhard: *See—*
Vogelsang, Dietrich; Scheffler, Gerhard; Brock, Norbert; and Lenke, Dieter, 3,813,384.

Scheldorf, Owen H., to General Electric Company. Centering spring arrangement for oscillatory compressors. 3,813,192, Cl. 417-416.000.

Schellenbaum, Max: *See—*
Duerr, Dieter; Hitz, Hans Rudolf; Duennenberger, Max; and Schellenbaum, Max, 3,813,437.

Schenck, Carl, Maschinenfabrik GmbH: *See—*
Frank, Helmut; Maus, Otfrid; and Tary, Endré, 3,812,725.

Schering Aktiengesellschaft: *See—*
Hofmeister, Helmut; Laurent, Henry; Prezewowsky, Klaus; and Wiechert, Rudolf, 3,813,418.

Schiller, Edward: *See—*
Gooch, Beverly R.; and Schiller, Edward, 3,813,693.

Schippers, Heinz, to Barmag Barmer Maschinenfabrik Aktiengesellschaft. Continuous crimping of yarns. 3,812,664, Cl. 57-34.0hs.

Schlatter, Rene, to Latrobe Steel Company. Controlled pressure consumable electrode vacuum arc remelting process. 3,812,899, Cl. 164-52.000.

Schlauch, Richard M.: *See—*
Beach, William A.; and Schlauch, Richard M., 3,812,966.

Schlegel, P. L., Jr., to George Lithograph Company. Photo composing machine and method for making plates from microfilm. 3,813,159, Cl. 355-53.000.

Schloemann Aktiengesellschaft: *See—*
Bollig, Georg; Grothe, Horst; Knell, Bernhard; Thalmann, Armin; and Zeller, Josef, 3,812,900.

Schmidt, Donald L.: *See—*
Hatch, Melvin J.; Yoshimine, Masao; Smith, Hugh B.; and Schmidt, Donald L., 3,813,413.

Schmidt, Donald L.; Smith, Hugh B.; and Walles, Wielm E., to Dow Chemical Company, The. Aqueous coating compositions of cyclic sulfonium zwitterions and colloidal sols. 3,813,363, Cl. 260-29.300.

Schmidt, Peter: *See—*
Bauman, Gunther; Schmidt, Peter; Eisele, Hermann; and Wahl, Josef, 3,812,710.

Schmuck, Peter, to Hilti Aktiengesellschaft. Electrical contact for stators in electric tools. 3,813,567, Cl. 310-50.000.

Schneider, Sol: *See—*
Weiner, Maurice; Carter, John L.; and Schneider, Sol, 3,813,608.

Schneider, William P.: *See—*
Pike, John E.; and Schneider, William P., 3,813,433.

Scholz, Hans, to English Electric Valve Company, Limited. Camera tube convertible from integral mesh to separate mesh type. 3,813,572, Cl. 315-3.000.

Scholz, Joerg, to Rexroth, G. L., GmbH. Hydraulic vane machine with controlled vanes. 3,813,194, Cl. 418-82.000.

Schon, Erwin: *See—*
Schranz, Karl-Wilhelm; Hunicke, Wolfgang; Brus, Gerhard H.; Schon, Erwin; Busch, Josef; and Bruck, Herbert, 3,813,246.

Schraft, Horst: *See—*
Baur, Hellmuth; and Schraft, Horst, 3,813,216.

Schranz, Karl-Wilhelm; Hunicke, Wolfgang; Brus, Gerhard H.; Schon, Erwin; Busch, Josef; and Bruck, Herbert, to Agfa-Gevaert Aktiengesellschaft. Process for the reoxidation of photographic bleaching and bleach-fix baths. 3,813,.46, Cl. 96-60.0bf.

Schriever, Richard L.; Johansen, Harold R.; and Sandy, Richard E., to United States of America, Atomic Energy Commission. Method and apparatus for enhancing electrical discharges in gas lasers. 3,813,612, Cl. 331-94.500.

Schroeder, James E.: *See—*
McStrack, Darrel D.; and Schroeder, James E., 3,813,296.

Schubert & Salzer Maschinenfabrik Aktiengesellschaft: *See—*
Landwehrkamp, Hans, 3,813,050.

Schultheis, Harry Baldwin, to Dillon, W. C., & Company, Inc. Boom length indicator. 3,812,589, Cl. 33-139.000.

Schultze, Edward F.: *See—*
Hardy, Willuam C.; Schultze, Edward F.; and Shepard, John C., 3,812,913.

Schurger, Rainer: *See—*
Walter, Lothar; and Schurger, Rainer, 3,813,133.

Schurter, Gary Lee: *See—*
Cooper, James Joseph, Jr.; and Schurter, Gary Lee, 3,813,635.

Schurter, Gary Lee; and DeLuca, Carlo Bruno, to International Telephone and Telegraph Corporation. Electrical connection for high voltage electrical systems. 3,813,639, Cl. 339-111.000.

Schweitzer, George J.: *See—*
Ziegler, Arnold H.; and Schweitzer, George J., 3,812,800.

Schweizerische Industrie-Gesellschaft: *See—*
Luginbuhl, Pierre, 3,812,948.

SCM Corporation: *See—*
Hedman, Clarence L., Jr.; and Vartanian, Perry H., Jr., 3,813,145.

Scotoni, Ralph, Jr.: *See—*
Cohen, Joseph; and Scotoni, Ralph, Jr., 3,812,785.

Scott, Arthur A., to Eaton Corporation. Dual function thermal valve. 3,812,832, Cl. 123-119.00a.

Scott, Gini. Sphere and pins assembly puzzle. 3,813,099, Cl. 273-156.000.

Scott, Milford M., Jr.; and Wheeler, Floyd J., Jr., to STP Corporation. Vacuum advance control system. 3,812,831, Cl. 123-117.00a.

Scott, Stanley J.; Noroski, William J.; and Rublack, Wilfred D., to General Electric Company. Contrast-enhancing picture tube

faceplate and process for producing same. 3,813,568, Cl. 313-92.00r.

Scott, Timothy F.: *See—*
Merrell, Kenneth C.; Scott, Timothy F.; Brushwyler, Gordon R.; Koegel, James H.; and Poindexter, William E., 3,813,325.

Searcy, William W.: *See—*
Struger, Odo J.; Grants, Valdis; and Searcy, William W., 3,813,649.

Sears, Edward G., to Charrin, Paul J. Alignment of a datum line source. 3,813,170, Cl. 356-138.000.

Secretary of State for Defense, The: *See—*
Sidford, Michael John, 3,813,674.

Sedgwick, Alan Fred: *See—*
Wilkes, Don Earl; Thompson, Charles Larry; and Sedgwick, Alan Fred, 3,813,609.

Seeliger, Wolfgang: *See—*
Witte, Helmut; and Seeliger, Wolfgang, 3,813,378.

Seese, Kathleen Ann: *See—*
Boothe, Jerry Emile; Sharpe, Andrew Jackson, Jr.; and Seese, Kathleen Ann, 3,813,264.

Seilib: *See—*
Liber, Michel. 3,813,118.

Seino, Hiroshi; Suzuno, Shingichi; Takeya, Yoshiaki; Tobita, Tsutomu; and Fukaya, Takeshi, to Nissan Motor Company, Ltd. and Hitachi Powdered Metals Company. Sintered fe-Cr-C/Mo-V-Ni/alloys impregnated with Pb or Pb-base alloys. 3,812,565, Cl. 29-182.100.

Seitz, David R.: *See—*
Compton, Jerry L.; and Seitz, David R., 3,812,577.

Sekihara, Takeshi: *See—*
Ito, Ikoh; Sekihara, Takeshi; and Emura, Tomoyuki, 3,813,373.

Selin, Terry G.: *See—*
De Zuba, George P.; Berger, Abe; and Selin, Terry G., 3,813,364.

Sellstedt, John H.; Teller, Daniel M.; and Guinosso, Charles J., to American Home Products Corporation. 6-(2-Substituted-2-triphenylphosphonium acetamido) penicillanic acids. 3,813,386, Cl. 260-239.100.

Sellstedt, John H.; and Wolf, Milton. Pyrrolo(1,2,3-de) quinoxalin-2(3H)-ones and related compounds. 3,813,392, Cl. 260-250.00r.

Setoguchi, Shinro: *See—*
Nakanishi, Michio; Munakata, Tomohiko; Setoguchi, Shinro; and Fukunari, Sunao, 3,813,395.

Shanni, Vincent; and Boassy, Emil J., to Champion, Inc. Swimming pool construction. 3,812,633, Cl. 52-169.000.

Shapiro, Leonard, to Pennwalt Corporation. Method of manufacturing a helical conveyor for a centrifuge. 3,812,564, Cl. 29-156.80r.

Sharpe, Andrew Jackson, Jr.: *See—*
Boothe, Jerry Emile; Sharpe, Andrew Jackson, Jr.; and Seese, Kathleen Ann, 3,813,264.

Shaw, Alexander; and McKie, Joseph, to National Research Development Corporation. Detachable blade handling tool. 3,812,743, Cl. 81-5.10r.

Shaw, Gordon Brian, to Pickford, Holland & Company Limited. Electrodes for glass furnaces. 3,813,468, Cl. 13-6.000.

Shaw, Roy L., Jr., to United States of America, Agriculture. Process for making potato starch without waste. 3,813,297, Cl. 127-66.000.

Shaw, Trevor: *See—*
Benisek, Ladislav; Winterbottom, Kenneth; Shaw, Trevor; and Edmondson, Gerald Keith, 3,813,220.

Shefsiek, Paul K.: *See—*
Miskolczy, Gabor; Shefsiek, Paul K.; and Brosens, Pierre J., 3,813,210.

Sheldahl, David B., to Atlantic Richfield Company. Metal working lubricant composition. 3,813,337, Cl. 252-33.400.

Shelledy, Frank B.: *See—*
Brock, George W.; and Shelledy, Frank B., 3,813,692.

Shelor, Clifford D., to Westvaco Corporation. Papermachine headbox slice opening gauge. 3,813,285, Cl. 162-263.000.

Shelton, Ray T.; and Jensen, Ellsworth O., to Weyerhauser Company. Resin-impregnated tissue overlays. 3,813,262, Cl. 117-155.0ua.

Sheng, Abel Ching Nam, to RCA Corporation. Current source. 3,813,595, Cl. 323-4.000.

Shepard, John C.: *See—*
Hardy, Willuam C.; Schultze, Edward F.; and Shepard, John C., 3,812,913.

Sherwin-Williams Company, The: *See—*
Jacobs, Richard L., 3,813,446.

Shiber, Samuel. Antiskid control system. 3,813,129, Cl. 303-21.00b.

Shieh, Kenneth K.; Donnelly, Brendan J.; and Lee, Howard A., to Anheuser-Busch, Incorporated. Methods of making glucose isomerase and of coverting glucose to fructose. 3,813,320, Cl. 195-66.00r.

Shiley, Donald P. Center post heart valve. 3,812,542, Cl. 3-1.000.

Shim, Norman: *See—*
Szymber, Oleg; and Shim, Norman, 3,813,155.

Shima, Shunji; Kadowaki, Hideyoshi; Muto, Eiji; Okazaki, Ichiro; and Matsumura, Koichi, to Japan Storage Battery Co., Ltd. Paste type electrode backing plate for lead-acid battery. 3,813,300, Cl. 136-38.000.

Shimadzu Seisakusho Ltd.: *See—*
Sato, Tatsuo; and Takimoto, Shingo, 3,813,532.

Shimotsuma, Wataru, to Matsushita, Electric Industrial Co., Ltd. Heat-sensitive record. 3,813,677, Cl. 346-76.00r.

Shirota, Masahiko; and Nagano, Tomoji. Ship partition and lining construction. 3,812,808, Cl. 114-78.000.

Shito, Nobuhiko: *See—*
Matsuda, Youichi; Suzuki, Hiroshi; Shito, Nobuhiko; and Saito, Yosushi, 3,813,631.

Shlesinger, Bernard Edward, Jr. Positive lock electrical connector and receptacle assembly. 3,813,644, Cl. 339-252.00s.

Shofner, Don L.; and Alexander, Doyle L., to Phillips Petroleum Company. Rotating flame treater. 3,813,212, Cl. 432-183.000.

Shoji, Akira, to Toyo Automation Co., Ltd. Sensing device of acceleration and vibration. 3,813,505, Cl. 200-61.45r.

Shopsky, Harvey J., to Robertshaw Controls Company. Cased heat resistant alloy to reduce mercury corrosion. 3,812,718, Cl. 73-368.000.

Shopsky, Harvey J., to Robertshaw Controls Company. Temperature bulb with an inner liner to reduce mercury corrosion. 3,812,719, Cl. 73-368.000.

Shopsky, Harvey J., to Robertshaw Controls Company. Inhibitor to reduce mercury corrosion. 3,812,720, Cl. 73-368.400.

Short, John P.: *See—*
Davidsohn, Uryon S.; Short, John P.; Combs, Clyde, Jr.; and Guerra, Edward E., 3,813,584.

Sidford, Michael John, to Secretary of State for Defense, The. Cavity backed dipole-slot antenna for circular polarization. 3,813,674, Cl. 343-730.000.

Siemens Aktiengesellschaft: *See—*
Haas, Werner; and Isensee, Klaus-Staffen, 3,812,890.
Huber, Josef, 3,813,648.
Kesselring, Fritz, 3,813,507.

SIG Schweizerische Industrie-Gesellschaft: *See—*
Kopp, Georg, 3,812,955.

Sigmatron, Inc., mesne: *See—*
Webb, Robert D., 3,813,575.

Sijbring, Pieter Herman, to Instituut Voor Bewaring en Verwerking Van Landbouxprodukten. Process and apparatus for preparing fried edible products. 3,812,775, Cl. 99-404.000.

Silverberg, Morton, to Xerox Corporation. Corona generating apparatus. 3,813,547, Cl. 250-324.000.

Silverberg, Morton, to Xerox Corporation. Corona generating methods and apparatus therefor. 3,813,548, Cl. 250-324.000.

Silvestri, Anthony J.: *See—*
Weisz, Paul B.; and Silvestri, Anthony J., 3,813,331.

Silvi, James J.: *See—*
Marshall, Preston F.; and Silvi, James J., 3,812,553.

Siminski, Gerald W.: *See—*
Swann, Clifford; and Siminski, Gerald W., 3,813,052.

Simmonds, Robert C., Jr.: *See—*
Frederick, Eugene G.; Morse, Albert I.; and Simmonds, Robert C., Jr., 3,813,201.

Simmons, Ronald L., to Hercules Incorporated. Random orientation of staple in slurry-cast propellants. 3,813,458, Cl. 264-3.00c.

Sims, Wilbert Norman; and Miscovich, John A., to Marcona Corporation. Method and apparatus for continuously excavating particulate material and converting it to slurry. 3,813,125, Cl. 299-7.000.

Singer Company, The: *See—*
Bartlett, Kenneth G., 3,813,529.
Beer, Emanuel E.; and Jeltrup, Eric H., 3,813,556.
Blanding, Curtis J., 3,813,528.
Ketterer, Stanley J., 3,812,729.

Sioma, Edward M., to Rohm & Haas Company. Electro-optical coupler unit. 3,813,539, Cl. 250-206.000.

Sitam Societa' Industriale Telai Automatici Milano S.r.l.: *See—*
Colombo, Arturo, 3,812,556.

Sittmann, Brigitte, to Vereinigte Baubeschlagfabriken Gretsch & Co., GmbH. Adjusting mechanism for the retaining springs of safety ski bindings. 3,813,110, Cl. 280-11.35t.

Skerlos, Peter C., to Zenith Radio Corporation. Video signal processing system and method with above-white-level noise inversion. 3,812,921, Cl. 173-7.30r.

SKF Industrial Trading and Development Company N.V.: *See—*
Walter, Lothar; and Schurger, Rainer, 3,813,133.

SKF Industries, Inc.: *See—*
Martinie, Howard M., 3,813,135.

Skidmore, Paul H., to Hercules Incorporated. Case bonding system for cast composite propellants. 3,813,308, Cl. 149-109.000.

Skillern, John A. Elastic band gun. 3,812,833, Cl. 124-19.000.

Skinner, William A., Jr.: *See—*
Lemma, Aklilu; Parkhurst, Robert M.; and Skinner, William A., Jr., 3,813,383.

Skowron, Carl S.; and Kolozsi, William A. Film holder for making prints. 3,813,164, Cl. 355-44.000.

Smidth, S. L., & Co.: *See—*
Gommesen, Hans, 3,813,211.

Smith, Dean G., to Goodrich, B. F., Company, The. Sealing ring. 3,813,104, Cl. 277-94.000.

Smith, Fred T., to Sargent Industries, Inc. Noise reduction apparatus and method. 3,812,676, Cl. 60-431.000.

Smith, George C. Force multiplying type archery bow. 3,812,835, Cl. 124-24.00r.

Smith, Herchel: *See—*
Douglas, George H.; Faust, Warren R.; and Smith, Herchel, 3,813,420.

Smith, Hugh B.: *See—*
Hatch, Melvin J.; Yoshimine, Masao; Smith, Hugh B.; and Schmidt, Donald L., 3,813,413.
Schmidt, Donald L.; Smith, Hugh B.; and Walles, Wielm E., 3,813,363.

Smith, John I.; and McKinley, William R., to Rolm Corporation. Memory cell with reduced voltage supply while writing. 3,813,653, Cl. 340-173.0df.

Smith, Maurice N., to United States of America, Navy. Three-phase power disturbance monitor. 3,813,667, Cl. 340-248.00a.

Smith, Robert E., to Dayton Progress Corporation. Fastener and retainer assembly. 3,812,895, Cl. 151-41.740.

Smith, Robert William George; Barron, David Michael Arthur; and Wingrove, Arthur George, to Dialled Despatches Limited. Conveyor system. 3,813,058, Cl. 243-16.00r.

Smolyar, Anatoly Alexeevich: *See—*
Neshumaev, Anatoly Dmitrievich; Goncharov, Boris Konstantinovich; Smolyar, Anatoly Alexeevich; and Chigir, Leonid Nikolaevich, 3,812,763.

Snam Progetti, S.p.A.: *See—*
Mauri, Marcello Massi; and Moggi, Pietro Antonio, 3,813,377.
Pagani, Girogio, 3,813,229.

Snoddy, Lowell G.: *See—*
Abernathy, William J.; and Snoddy, Lowell G., 3,813,183.

Sobieniak, Mathew G.: *See—*
Burr, John W.; Fricke, Hans D.; and Sobieniak, Mathew G., 3,812,671.

Societa Italiana Resine S.I.R. S.p.A.: *See—*
Craveri, Renato; Manachini, Luigi; and Aragozzini, Fabrizio, 3,813,319.

Societe Anonyme Automobiles Citroen: *See—*
Cadiou, Jean, 3,813,151.

Societe de Constructions Mecaniques Panhard & Levasser: *See—*
Panhard, Jean, 3,812,906.

Societe des Procedes Modernes d'Injection Sopromi: *See—*
Traisnel, Pierre, 3,812,830.

Societe Financiere Francaise de Licences et Brevets: *See—*
Potin, Marcel, 3,813,459.

Societe Generale de Constructions Electriques et Mecaniques: *See—*
Chevalier, Gabriel; and Gatel, Gilbert, 3,813,530.

Societe Nationale d:Etude et de Construction de Moteurs d'Aviation: *See—*
Bouiller, Jean Georges; Gobin, Michel Roland; Lacroix, Armand Jean-Baptiste; and Bauger, Louis Jules, 3,813,185.

Societe Nationale des Poudres et Explosifs, mesne: *See—*
Doin, Bernard; and Plantif, Bernard, 3,813,007.

Sokol, Kurt Rudolf Franz. Apparatus for measuring blood pressure with corresponding cuff section and indication ranges. 3,812,844, Cl. 128-2.05g.

Solomon, Arieh, to British & Foreign Tobacco Company Limited. Hinged container. 3,813,025, Cl. 229-2.500.

Solomon, Raymond Lewis, 1/2 to Trayler, William J. and Trayler, Lois J. Apparatus for treating noxious effluents. 3,812,793, Cl. 110-8.00r.

Sondergaard, Per: *See—*
Fisker, Jens Erik; and Sondergaard, Per, 3,813,203.

Sonicaid Limited: *See—*
Clifton, David A.; and Fielder, Frederick D., 3,813,654.

Sonotone Corporation, mesne: *See—*
Vignini, Walter R., 3,813,499.

Sorenson, Perc C. Engine efficiency determining apparatus. 3,812,711, Cl. 73-114.000.

Soudelier, Morris A., to Houma Valve Service, Inc. Fluid sampling device. 3,812,722, Cl. 73-422.0tc.

Southworth, Christopher John Morrison, to Machine Tool Divisional Services Limited. Gear hobbing machines. 3,812,761, Cl. 90-4.000.

Spadafora, Joe. Brake signal device for a vehicle. 3,813,542, Cl. 250-221.000.

Spanel, Abram N.: *See—*
Spanel, Abram N.; Wittler, Bernard H.; and Leszczak, Nicholas (said Leszczak and said Wittler assors. to said), 3,812,799.

Spanel, Abram N.; Wittler, Bernard H.; and Leszczak, Nicholas, said Leszczak and said Wittler assors. to said Spanel, Abram N. Method and means of tufting. 3,812,799, Cl. 112-79.00r.

Spartanics, Ltd.: *See—*
Mohan, William L.; and Willits, Samuel P., 3,813,523.

Sperry Rand Corporation: *See—*
Yound, Robert G.; Trible, Paul S.; and Glass, Emmett F., 3,812,777.

Spindt, Charles A.; and Heynick, Louis N., to Stanford Research Institute. Methods of producing field ionizer and field emission cathode structures. 3,812,559, Cl. 29-25.180.

Sprague, Stephen B. Device fo insulating material holding ajacent lengths of semi-rigid electrical conductors joined. 3,813,480, Cl. 174-92.000.

Sprecher & Schuh AG: *See—*
Blum, Alex, 3,813,621.

Squibb, E. R., & Sons, Inc.: *See—*
Haughwitz, Rudiger D., 3,813,409.
Yale, Harry L.; and Petigara, Ramesh B., 3,813,396.

Srinivasan, Sundaresa: *See—*
Heilweil, Israel J.; and Srinivasan, Sundaresa, 3,813,290.

St Cyr, David R., to Goodyear Tire & Rubber Company, The. Hydrocarbon-derived resins having low softening point. 3,813,357, Cl. 260-5.000.

St. Jacques, Leonard: *See—*
Wigby, Jon; and St. Jacques, Leonard, 3,813,634.

St. John, Daniel S., to Holotron Corporation. Holographis color television record system. 3,813,685, Cl. 358-.200.

Staal, John V., to Avco Everett Research Laboratory, Inc. Method of and apparatus for absorbing high power laser energy. 3,813,511, Cl. 219-121.0lm.

Stahl, Robert R.: *See—*
Laakaniemi, Richard N.; and Stahl, Robert R., 3,812,873.

Stahlfeld, Donald L.: *See—*
Carr, Norman L.; Massoth, Franklin E.; Stahlfeld, Donald L.; and Young, John E., Jr., 3,812,652.

Standard Oil Company: *See—*
Steigelmann, Edward F., 3,812,651.

Standard Oil Company (Indiana): *See—*
Allen, John K., 3,813,355.

Stanford Research Institute: *See—*
Spindt, Charles A.; and Heynick, Louis N., 3,812,559.

Staples, Jon Tewsbury: *See—*
Minsk, Louis Morton; and Staples, Jon Tewsbury, 3,813,247.

Stars, William K., to Craftool Company, Inc., The. Shuttle for a hand loom. 3,812,887, Cl. 139-29.000.

Steamatic, Inc.: *See—*
Blackmon, William G., 3,812,552.

Stechler, Bernard G. Deep ocean mining, mineral harvesting and salvage vehicle. 3,812,922, Cl. 175-6.000.

Steckel, Elmer A.; Schaffer, William G.; and Payne, Roger A., to Gates Rubber Company, The. Continuously wrapped hose and method of making the same. 3,813,314, Cl. 156-162.000.

Steelcase Inc.: *See—*
Mohr, Robert G.; and Olree, Adrian R., 3,813,073.

Stefaniak, Ferdynand: *See—*
Kycia, Henryk; Chmielewska, Danuta; Rolak, Hanna; Michno, Zbigniew; Zaniuk, Jan; Surgiewicz, Janusz; Stefaniak, Ferdynand; Lenkowski, Przemyslaw; and Kobosko, Anna, 3,813,415.

Steffy, Jack J.; and Duffield, Peter L., to Mead Corporation, The. Catching apparatus for a jet drop recorder. 3,813,675, Cl. 346-75.000.

Stehlin, Robert A., to Texas Instruments, Incorporated. Triggered monostable multivibrator circuit utilizing complementary transistor pairs. 3,813,562, Cl. 307-273.000.

Steigelmann, Edward F., to Standard Oil Company. Process for separating gas by diffusion. 3,812,651, Cl. 55-16.000.

Steinmuller, L. & C., G.m.b.H.: *See—*
Plura, Georg, 3,813,333.

Sterling Drug Inc.: *See—*
Clarke, Robert L.; and Daum, Sol J., 3,813,404.
Phillips, Donald K., 3,813,430.

Stern. Leif Einar, to Kritbruksbolaget i Malmo AB. Composition of matter for controlling oil pollution preferably oil discharge in water. 3,812,973, Cl. 210-502.000.

Stewart, Oliver M.; Maringer, Robert E.; and Mobley, Carroll E., Jr., to Battelle Development Corporation. Method of producing continuous filaments using a rotating heat-extracting member. 3,812,901, Cl. 164-87.000.

Stinson, Ralph G. Movable bidet. 3,812,543, Cl. 4-7.000.

Stock, Edwin Henry, to Intertherm, Inc. Spin-flanging tool. 3,812,698, Cl. 72-71.000.

Stockburger, Dieter: *See—*
Klocke, Hans Joachim; Stockburger, Dieter; Gierth, Volker; and Zeitler, Gerhard, 3,813,375.

Stolle Corporation, The: *See—*
Maschke, Marvin Walter, 3,812,953.

Stolz, Albert, to Daimler-Benz Aktiengesellschaft. Air conditioning system for cooling the interior space of motor vehicle. 3,812,687, Cl. 62-323.000.

Stoody Company: *See—*
Woods, Marion D.; and Zvanut, Albert J., 3,813,509.

Stora Kopparbergs Bergslags Aktiebolag: *See—*
Backstrom, Sven Hjalmar; and Hellman, Per, 3,813,196.

STP Corporation: *See—*
Scott, Milford M., Jr.; and Wheeler, Floyd J., Jr., 3,812,831.

Strate, Lowell D. Power edge attachment for tractor. 3,812,917, Cl. 172-15.000.

Straughan, Clemens F., to CFS Corporation. Method and apparatus for simultaneously applying to an extended cylindrical object a coating and a plastic film wrapping to retain the coating. 3,813,272, Cl. 156-468.000.

Strehlow, Robert W., to Rexnord Inc. Dust control system utilizing temporarily stored aggregates. 3,812,889, Cl. 141-93.000.

Struger, Odo J.; Grants, Valdis; and Searcy, William W., to Bradley, Allen, Company. Controller program editor. 3,813,649, Cl. 340-172.500.

Stuart, Phillip G. Expandable waistband for trousers. 3,812,541, Cl. 2-237.000.

Stuart, Richard L., to Rexon Electronics, Inc. Single tone carrier recovery system. 3,813,598, Cl. 325-49.000.

Stubits, Marcella C., to Anheuser-Busch, Incorporated. Dry cleaning method. 3,813,221, Cl. 8-142.000.

Stumpen, Klaus: *See—*
Sajben, Johannes Otto; Lippert, Axel; Stumpen, Klaus; and Grunewald, Rainer, 3,812,885.

Sublistatic Holding S.A.: *See—*
De Plasse, Noel, 3,813,218.

Suchcicki, Henry J. Snow traction device for motor vehicles. 3,813,131, Cl. 305-29.000.

Sugimori, Teruhiko: *See—*
Joh, Yasushi; and Sugimori, Teruhiko, 3,813,372.

Sugimoto, Takao; and Takagi, Izumi, to Kawasaki Jukogyo Kabushiki Kaisha. V-belt type automatic speed change gear. 3,812,731, Cl. 74-230.17e.
Suldin, Stanislav Mikolaevich: *See—*
Korotkov, Mikhail Mikhailovich; Suldin, Stanislav Mikolaevich; and Vasin, Alexandr Ivanovich, 3,812,806.
Sumitomo Chemical Company, Ltd.: *See—*
Ito, Ikoh; Sekihara, Takeshi; and Emura, Tomoyuki, 3,813,373.
Sumitomo Precision Products Company, Limited: *See—*
Yokokawa, Takio, 3,812,883.
Sun Oil Company: *See—*
Hardy, Willuam C.; Schultze, Edward F.; and Shepard, John C., 3,812,913.
Sun Oil Company of Pennsylvania: *See—*
Coppock, Walter J.; Amaroso, James R.; and Griffith, John Q., III, 3,813,338.
Superior Continental Corporation: *See—*
Roberts, Walter L., 3,813,500.
Surgical Design Corporation: *See—*
Banko, Anton, 3,812,855.
Surgiewicz, Janusz: *See—*
Kycia, Henryk; Chmielewska, Danuta; Rolak, Hanna; Michno, Zbigniew; Zaniuk, Jan; Surgiewicz, Janusz; Stefaniak, Ferdynand; Lenkowski, Przemyslaw; and Kobosko, Anna, 3,813,415.
Suzuki, Hiroshi: *See—*
Matsuda, Youichi; Suzuki, Hiroshi; Shito, Nobuhiko; and Saito, Yosushi, 3,813,631.
Suzuno, Shingichi: *See—*
Seino, Hiroshi; Suzuno, Shingichi; Takeya, Yoshiaki; Tobita, Tsutomu; and Fukaya, Takeshi, 3,812,565.
Svensson, Hugo Ragnvald, to ABU Aktiebolag. Coupling device for fishing reels. 3,812,940, Cl. 192-17.000.
Swann, Clifford; and Siminski, Gerald W., to Arcata Graphics Corporation. Web tension control system. 3,813,052, Cl. 242-58.300.
Swiss Aluminium Ltd.: *See—*
Hofling, Erich; Baur, Rudolf; and Bloeck, Siegfried, 3,813,303.
Swiss Aluminum Ltd.: *See—*
Arbenz, Heinz; and Caspar, Jakob, 3,812,902.
Sybron Corporation: *See—*
Beach, William A.; and Schlauch, Richard M., 3,812,966.
Maroney, William J., 3,812,969.
Oringer, Maurice Jules, 3,812,858.
Rick, Michael Edward, 3,813,147.
Sygnator, Henry Anton, to Illinois Tool Works Inc. Locking and strip-resistant fastener. 3,812,639, Cl. 52-758.00f.
Sykes, Alfred Ernest. Workpiece holders. 3,813,108, Cl. 279-4.000.
Sylvester, Rowland L. Green tire support. 3,812,974, Cl. 211-23.000.
Symon, Ted, to Universal Oil Products Company. Preparation of geranyl compounds. 3,813,450, Cl. 260-654.00r.
Szczepanski, Harry. Hot-water mask-washing machine. 3,812,869, Cl. 134-111.000.
Szczepanski, Harry. Spray booth. 3,813,042, Cl. 239-193.000.
Szeverenyi, Nikolaus A.; and Thompson, David F., to GTE Sylvania Incorporated. Temperature compensated fluid level sensor. 3,813,629, Cl. 337-324.000.
Szoke, Abraham, to Massachusetts Institute of Technology. Bistable optical device. 3,813,605, Cl. 330-4.300.
Szymber, Oleg; and Shim, Norman, to GAF Corporation. Automatic focusing system for projectors and the like. 3,813,155, Cl. 353-101.000.
Tadokoro, Tomoo: *See—*
Muroki, Takumi; and Tadokoro, Tomoo, 3,812,673.
Takagi, Izumi: *See—*
Sugimoto, Takao; and Takagi, Izumi, 3,812,731.
Takagi, Makoto, to Nippon Air Brake Co., Ltd., The. Differential pressure sensing valve. 3,812,874, Cl. 137-110.000.
Takahashi, Nobuhito: *See—*
Oshima, Akira; Tsuboshima, Kazuhiko; and Takahashi, Nobuhito, 3,813,438.
Takamura, Yoshihiko; Nakajima, Yosuke; Ohi, Reiichi; and Miyazako, Takushi, to Fuji Photo Film Co., Ltd. Silver halide photosensitive element containing an antifogging combination of a nitrated heterocyclic compound and a polymeric stabilizer. 3,813,250, C. 96-76.00r.
Takase, Tadayoshi, to Rinnai Kabushiki Kaisha. Cooking oven. 3,812,837, Cl. 126-21.00a.
Takeda Chemical Industries, Ltd.: *See—*
Wada, Takeo; and Komai, Saburo, 3,813,346.
Takeya, Yoshiaki: *See—*
Seino, Hiroshi; Suzuno, Shingichi; Takeya, Yoshiaki; Tobita, Tsutomu; and Fukaya, Takeshi, 3,812,565.
Takimoto, Shingo: *See—*
Sato, Tatsuo; and Takimoto, Shingo, 3,813,532.
Talentum Developments Limited: *See—*
Broadbent, Arnold; and Frost, Peter, 3,813,551.
Tamarin, Bernard J.: *See—*
Meletti, Adolph; and Tamarin, Bernard J., 3,813,501.
Tan, Chiong-Heng: *See—*
Crowne, Francis R.; Tan, Chiong-Heng; and Vandenbroek, Martin A., 3,813,327.
Tanabe, Kenzo: *See—*
Mino, Mineo; Fujisawa, Kiyoji; and Tanabe, Kenzo, 3,813,484.
Tanaka, Kyoichi; Mio, Takeshi; and Tanaka, Toyoyasu, to Toyo Contact Lens Company, Limited. Hydrophilic synthetic high polymers for soft contact lenses and a process for manufacturing the same. 3,813,447, Cl. 260-63.0uy.
Tanaka, Toyoyasu: *See—*
Tanaka, Kyoichi; Mio, Takeshi; and Tanaka, Toyoyasu, 3,813,447.
Tanaka, Yoshinobu: *See—*
Nagata, Yoshihiro; Yoda, Tadashi; and Tanaka, Yoshinobu, 3,812,804.
Taneda, Yasuo: *See—*
Watabe, Kaname; Arai, Kosuke; Taneda, Yasuo; and Naka, Kiyomi, 3,813,162.
Tanigawa, Shizuhiko: *See—*
Sakumoto, Hideki; Namoto, Yoshiteru; Ushihara, Masaharu; Tanigawa, Shizuhiko; and Kanda, Shozo, 3,813,057.
Tardieu, Andre. Manufacture of concretes and mortars. 3,813,460, Cl. 264-28.000.
Tarui, Yasuo; Komiya, Yoshio; and Harada, Yasoo, to Industrial Science & Technology, Agency of. Compound semiconductor device having undercut oriented groove. 3,813,585, Cl. 317-235.00r.
Tary, Endre: *See—*
Frank, Helmut; Maus, Otfrid; and Tary, Endre, 3,812,725.
Taupin, Jean Marie, to Rahdener Maschinenfabrik August Kolbus. Device for inserting bookmarks into books. 3,813,093, Cl. 270-55.000.
Taylor, Fred W. Stairstep jet pulse incinerator. 3,812,794, Cl. 110-8.00r.
Taylor, Julian S. Restrictor valve. 3,812,882, Cl. 137-556.600.
Taylor, Richard P.: *See—*
Terbay, Joseph J.; and Taylor, Richard P., 3,812,946.
Teach, Ted L.; and Ramsay, James D., to Laserplane Corporation. Laser beam survey method and apparatus. 3,813,171, Cl. 356-152.000.
Technar Incorporated: *See—*
Bell, Lon E., 3,812,726.
Tecumseh Products Company: *See—*
Von Kaler, Roland L.; and Jolliff, Norman E., 3,812,735.
Teijin Limited: *See—*
Watabe, Kaname; Arai, Kosuke; Taneda, Yasuo; and Naka, Kiyomi, 3,813,162.
Teledyne, Inc.: *See—*
Ramey, Robert M., 3,813,207.
Telefonaktiebolaget LM Ericsson: *See—*
Hedman, Jan-Olof, 3,812,575.
Teller, Daniel M.: *See—*
Sellstedt, John H.; Teller, Daniel M.; and Guinosso, Charles J., 3,813,386.
Temperature Control, Inc.: *See—*
Wieken, Robert H.; and Potter, Harland C., 3,812,797.
Temple, William F.; and Johnston, David K., to Allis-Chalmers Corporation. Inlet choke vane for transverse blower. 3,813,184, Cl. 415-54.000.
Tennessee Valley Authority: *See—*
Kendrick, Lucian A., Jr., 3,813,233.
Tensho, Akira; Kamiya, Takashi; Yoshihisa, Saito; Hashimoto, Masashi; and Hideo, Seki, to Fujisawa Pharmaceutical Co., Ltd. Purine derivatives having hypocholesterolemic activity. 3,813,394, Cl. 260-252.000.
Tepper, Leonard, to Mann, Henry, Inc. Adjustable die pair for cutting and forming axial leads of electrical components. 3,812,703, Cl. 72-326.000.
Terbay, Joseph J.; and Taylor, Richard P., to National Cash Register Company, The. Programmable platen compression rolls. 3,812,946, Cl. 197-129.000.
Terrell, Melvin Leon, to International Telephone and Telegraph Corporation. Vent valve. 3,812,879, Cl. 137-512.150.
Terrot, C., & Soehne: *See—*
Engelfried, Werner, 3,812,691.
Tesa S.A.: *See—*
Nigg, Fritz; and Risse, Jean-Claude, 3,812,590
Tescom Corporation: *See—*
Fleischhacker, Joseph F.; and Hruby, Thomas W., 3,812,877.
Tester, Colin Alfred, to Winget Limited. Ice making apparatus. 3,812,686, Cl. 62-180.000.
Teter, Michael P., to Corning Glass Works. Defect sensing apparatus and method. 3,813,173, Cl. 356-239.000.
Texaco Inc.: *See—*
Fowler, Joe R., 3,813,656.
Higgs, Kenneth O.; Richmond, Robert C.; and Marsch, Lawrence F., 3,812,706.
Texas Instruments, Incorporated: *See—*
Johnson, Ralph B., 3,813,552.
Nygaard, James L., 3,812,947.
Stehlin, Robert A., 3,813,562.
Texas Royal Manufacturing Company: *See—*
Rogers, Richard L., 3,812,986.
Textron, Inc.: *See—*
Burr, John W.; Fricke, Hans D.; and Sobieniak, Mathew G., 3,812,671.
Chaplin, John B., 3,812,930.
Reiland, Bernard F., 3,812,757.
Textron Incorporated: *See—*
Palachek, Charles V.; and Underhill, William K., Jr., 3,813,186.
Thalmann, Armin: *See—*

Bollig, Georg; Grothe, Horst; Knell, Bernhard; Thalmann, Armin; and Zeller, Josef, 3,812,900.
Theriot, Gilbert A.: *See—*
Elkins, Johnny C.; and Theriot, Gilbert A., 3,812,587.
Thermal Dynamics Corporation: *See—*
Hatch, Bruce O., 3,813,510.
Thermo Electron Corporation: *See—*
Benson, Robert W.; and Chapman, James Ronald, 3,812,709.
Miskolczy, Gabor; Shefsiek, Paul K.; and Brosens, Pierre J., 3,813,210.
Theuerkaue, Fred, to Pipe Machinery Company, The. Tool head with differential motion recede mechanism. 3,812,548, Cl. 10-120.50r.
Thiokol Chemical Corporation: *See—*
Gillis, Marina N.; and Mazzeo, Michael P., 3,813,361.
Villa, Jose L., 3,813,368.
Thomason, Harry E. Heat, cold and dry storage. 3,812,903, Cl. 165-3.000.
Thompson, Alonzo C.: *See—*
Gueldner, Richard C.; Tumlinson, James H., III; Hardee, Dicky D.; Hedin, Paul A.; Thompson, Alonzo C.; and Minyard, James P., 3,813,443.
Thompson, Arnold M. Ice skate sharpening device. 3,812,626, Cl. 51-170.0pt.
Thompson, Charles Larry: *See—*
Wilkes, Don Earl; Thompson, Charles Larry; and Sedgwick, Alan Fred, 3,813,609.
Thompson, David F.: *See—*
Szeverenyi, Nikolaus A.; and Thompson, David F., 3,813,629.
Thompson, Robert L. Tire chain. 3,813,049, Cl. 152-241.000.
Thomson, J. Brent, to Hercules Incorporated. Priming composition. 3,813,351, Cl. 260-2.0ep.
Thomson-CSF: *See—*
Hartemann, Pierre; and Dieulesaint, Eugene, 3,813,618.
Thorne-Booth, George M., to Bendix Corporation, The, mesne. System for automatically controlling a land vehicle. 3,813,538, Cl. 246-122.00r.
Thurston, Elvin Frederick William: *See—*
Ezekiel, Aaron David; Thurston, Elvin Frederick William; Harper, Michael Frederick; and Wood, Malcolm Barlow, 3,813,249.
Tice, James B.; and Bowler, Colin E. J., to General Electric Company. Reduction of turbine generator shaft torques. 3,813,593, Cl. 321-9.00r.
Tidwell, Hubert. Recreation vehicle. 3,812,926, Cl. 180-9.240.
Tiffany, Floyd L., to Fisher Controls Company, Inc. Electrical safety barrier. 3,813,578, Cl. 317-16.000.
Tillman, Harry L.: *See—*
Fellwock, Charles G.; Hortin, Kenneth L.; and Tillman, Harry L., 3,813,137.
Tirellis, Gus George: *See—*
Nowak, Matthew; and Tirellis, Gus George, 3,813,174.
Titus, Charles H.; and Wittle, J. Kenneth, to General Electric Company. Apparatus and process for segregating and decomposing heterogeneous waste materials. 3,812,620, Cl. 48-65.000.
Tlaamini, Gianpietro: *See—*
Gambaretto, Gian Paolo; Tlaamini, Gianpietro; and Palma, Giancarlo, 3,813,370.
Toaz, Milton W., to Gould Inc. Method of forming a composite bearing structure. 3,812,563, Cl. 29-149.5pm.
Tober, Gustav: *See—*
Pieper, Helmut; and Tober, Gustav, 3,813,258.
Tobita, Tsutomu: *See—*
Seino, Hiroshi; Suzuno, Shingichi; Takeya, Yoshiaki; Tobita, Tsutomu; and Fukaya, Takeshi, 3,812,565.
Todd, Peter Frank: *See—*
Pioli, Alexander Joseph Peter; Hollyhead, William Brian; and Todd, Peter Frank, 3,813,423.
Toida, Takashi: *See—*
Nikaido, Akira; Nakajima, Fumio; Onda, Mitsuo; Machida, Takayasu; and Toida, Takashi, 3,812,670.
Tokeim Corporation: *See—*
Lagnston, Earl M., 3,813,527.
Tokyo Shibaura Electric Co., Ltd.: *See—*
Yamada, Hirohide, 3,813,651.
Tomita, Chuji; Kasai, Kazutomo; and Okonogi, Itaru, to Kabushiki Kaisha Suwa Seikosha. Hard, sintered gold-colored alloy TiN cemented with Ti, Al, Cr and Fe alloy binder. 3,813,227, Cl. 29-182.500.
Tompkins, Leo L. Low flow fluid motor. 3,813,189, Cl. 417-220.000.
Tong, Brian Peter: *See—*
Andrews, Kenneth John Maynard; and Tong, Brian Peter, 3,813,393.
Tong, Jeffrey H. Y.: *See—*
Benoiton, Norman L.; Tong, Jeffrey H. Y.; D'Iorio, Antoine; and Petitclerc, Jean C., 3,813,317.
Tonwaren- und Porzellanfabrik Rossler AG: *See—*
Rossler, Willi, 3,813,202.
Torii, Etsuko: *See—*
Ikeda, Mitsusuke; Sato, Hisanao; Torii, Etsuko; Morimoto, Kazuhisa; and Hasegawa, Yo, 3,813,242.
Torii, Shuichi: *See—*
Hatsukano, Yoshikazu; Nomiya, Kosei; and Torii, Shuichi, 3,813,564.
Nomiya, Kosei; and Torii, Shuichi, 3,813,563.
Torrance, Gordon A.: *See—*
Boehm, Walter G.; and Torrance, Gordon A., 3,813,087.
Torrence, James D.; and Graves, Fred L., to Allis-Chalmers Corporation. Spider bearing assembly for gyratory crushers. 3,813,047, Cl. 241-211.000.
Toth, Tibor Endre, to Union Carbide Corporation. Magnetically controlled power supply having pulsating output current control. 3,813,594, Cl. 321-18.000.
Toyo Automation Co., Ltd.: *See—*
Shoji, Akira, 3,813,505.
Toyo Contact Lens Company, Limited: *See—*
Tanaka, Kyoichi; Mio, Takeshi; and Tanaka, Toyoyasu, 3,813,447.
Toyo Kogyo Co., Ltd.: *See—*
Muroki, Takumi; and Tadokoro, Tomoo, 3,812,673.
Toyo Kohan Co., Ltd.: *See—*
Kawaguchi, Kiyoshi; Miyamatsu, Yasunori; Kamoi, Arao; and Fukuda, Kinya, 3,812,697.
Miyamatsu, Yasunori; Kamoi, Arao; and Fukuda, Kinya, 3,812,701.
Toyoda Koki Kabushiki Kaisha: *See—*
Kikuchi, Makoto; Asano, Hiroaki; Otsu, Ikuo; and Saeki, Toyoaki, 3,812,623.
Toyota Jidosha Kogyo Kabushika Kaisha: *See—*
Ogawa, Masahiro, 3,813,323.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Nakada, Masahiko; and Matsumoto, Hirofumi, 3,813,085.
Traeger, Alfred H., to Traeger Patents Pty. Limited and Traeger Charitable Trust Incorporated. Gas turbine vehicle drive. 3,813,557, Cl. 290-2.000.
Traeger Charitable Trust Incorporated: *See—*
Traeger, Alfred H., 3,813,557.
Traeger Patents Pty. Limited: *See—*
Traeger, Alfred H., 3,813,557.
Traisnel, Pierre, to Societe des Procedes Modernes d'Injection Sopromi. Electronic fuel injection control devices for internal combustion motors. 3,812,830, Cl. 123-32.0ea.
Trans-Lux Corporation: *See—*
Holloman, Charles J., 3,813,673.
Transfer Systems Incorporated: *See—*
Goldman, Arthur J.; Rowe, D. Garth; and Jones, Cecil Roy, 3,813,286.
Trap, Hendrikus Johan Lodewijk, to U.S. Philips Corporation. Method of treating a glass body. 3,813,276, Cl. 161-1.000.
Trapasso, Louis E.: *See—*
Juelke, Charles V.; and Trapasso, Louis E., 3,813,454.
Traver, Frank J., to General Electric Company. Process for producing polysiloxane useful as brake fluids. 3,813,425, Cl. 260-448.20e.
Trayler, Lois J.: *See—*
Solomon, Raymond Lewis, 3,812,793.
Trayler, William J.: *See—*
Solomon, Raymond Lewis, 3,812,793.
Trennjaeger Maschinen-and Sagelfabrik: *See—*
Jaegers, Leopold, 3,812,752.
Triad Fastener Corporation: *See—*
Merrick, Jim I.; Carlson, Carl J., Jr.; and Carlson, Donald W., 3,812,961.
Trible, Paul S.: *See—*
Yound, Robert G.; Trible, Paul S.; and Glass, Emmett F., 3,812,777.
Troeger, Henry, to Bendix Corporation, The. Eccentric flexural pivot. 3,813,089, Cl. 267-160.000.
Trout, Horace I. Massaging machine. 3,812,846, Cl. 128-5.700.
Trueb, Viktor: *See—*
Weick, Heinz Hermann; Trueb, Viktor; and Hesener, Walter, 3,813,275.
TRW, Inc.: *See—*
Herbenar, Edward J.; and Pozolo, Kenneth R., 3,813,178.
Mork, Halbert Louis, 3,813,067.
Tsuboshima, Kazuhiko: *See—*
Oshima, Akira; Tsuboshima, Kazuhiko; and Takahashi, Nobuhito, 3,813,438.
Tsuiki, Takao: *See—*
Nomiya, Kosei; and Tsuiki, Takao, 3,813,623.
Tsukahara, Hirokazu: *See—*
Futaki, Kiyoshi; Tsukahara, Hirokazu; and Emoto, Kazuhiro, 3,813,248.
Tuchiya, Takao: *See—*
Kamogawa, Yoshiro; and Tuchiya, Takao, 3,812,693.
Tumlinson, James H., III: *See—*
Gueldner, Richard C.; Tumlinson, James H., III; Hardee, Dicky D.; Hedin, Paul A.; Thompson, Alonzo C.; and Minyard, James P., 3,813,443.
Turner, Delber W., to Petrolite Corporation. Electric treater. 3,813,328, Cl. 204-302.000.
Tysk, Jan: *See—*
Olofsson, Sven; and Tysk, Jan, 3,812,714.
U. S. Reduction Company: *See—*
Salmon, David; Weirzbicke, Edward J.; Langston, Benny; and Beegle, Donald W., 3,813,238.
Uittenbogaard, Teunis Hermanus: *See—*
Van Dijum, Adalbertus Hermanus Jacobus Nieveen; and Uittenbogaard, Teunis Hermanus, 3,813,602.
Ujihara, Takasumi: *See—*
Yokoyama, Nobuo; and Ujihara, Takasumi, 3,812,771.
Ulm, Klaus: *See—*

Muller-Schiedmayer, Gunther; Muller, Heinz; Hubner, Herbert; and Ulm, Klaus, 3,813,441.
Umeda, Jun-Ichi; Aiki, Kunio; Kurata, Kazuhiro; and Kusumoto, Hazime, to Hitachi, Ltd. Light emitting diodes of the injection type. 3,813,587, Cl. 317-235.00n.
Underground Mining Machinery Limited: *See*—
Laycock, Geoffrey, 3,812,821.
Underhill, William K., Jr.: *See*—
Palachek, Charles V.; and Underhill, William K., Jr., 3,813,186.
Underwood, Ralph E. Can end construction. 3,813,000, Cl. 220-54.000.
Unger, Paul Sebastian. Indicator device for sport equipment. 3,812,819, Cl. 116-135.000.
Union Carbide Corporation: *See*—
Karol, Frederick J., 3,813,381.
Matzner, Markus; and McGrath, James E., 3,813,367.
Toth, Tibor Endre, 3,813,594.
United Aircraft Corporation: *See*—
Martin, Anthony N., 3,813,063.
United Kingdom Atomic Energy Authority: *See*—
Leaver, Bernard; and Mercer, Willard, 3,813,288.
Lenning, David Lees, 3,812,907.
United States of America
Agriculture: *See*—
Gueldner, Richard C.; Tumlinson, James H., III; Hardee, Dicky D.; Hedin, Paul A.; Thompson, Alonzo C.; and Minyard, James P., 3,813,443.
McKelvey, John B.; and Benerito, Ruth R., 3,813,421.
Shaw, Roy L., Jr., 3,813,297.
Army: *See*—
Aaron, Herbert S.; and Reiff, Louis P., 3,813,403.
Bernazzani, Richard J., 3,813,003.
Burnett, Jimmy D., 3,813,307.
Gikow, Emanuel, 3,813,582.
Grossman, Sidney J., 3,813,553.
Lintner, Michael A.; and Long, Louis, Jr., 3,813,431.
Mary, Donald J., 3,813,166.
Nowak, Matthew; and Tirellis, Gus George, 3,813,174.
Picard, Jean P.; Satriana, Daniel R.; and Masuelli, Frank J., 3,813,439.
Reindl, Adole, 3,813,601.
Weiner, Maurice; Carter, John L.; and Schneider, Sol, 3,813,608.
Army, mesne: *See*—
Baldwin, Mart G.; and Chaille, James L., 3,813,305.
Mutchler, Paul A., 3,812,838.
Reed, Samuel F., Jr., 3,813,304.
Reed, Samuel F., Jr., 3,813,306.
Atomic Energy Commission: *See*—
Anderson, Norman G., 3,813,031.
Schriever, Richard L.; Johansen, Harold R.; and Sandy, Richard E., 3,813,612.
Viecelli, James A., 3,813,555.
National Aeronautics and Space Administration: *See*—
Abernathy, William J.; and Snoddy, Lowell G., 3,813,183.
Dane, Dan H., 3,812,936.
Yang, Lien C.; and Menichelli, Vincent J., 3,812,783.
National Aeronautics and Space Administration; Administrator; with respect to an invention of:
Valinsky, Joseph P. Device for monitoring a change in mass in varying gravimetric environments. 3,812,924, Cl. 177-200.000.
Navy: *See*—
Alpers, Frederick C., 3,813,670.
Campbell, Kenneth J., 3,813,599.
Geil, Fred G., 3,813,687.
Gilliam, Clarence W., 3,813,534.
Scheets, David F., 3,813,671.
Smith, Maurice N., 3,813,667.
Army: *See*—
Conner, Michael E., 3,813,586.
United States Steel Corporation, mesne: *See*—
Pringle, William L., 3,812,935.
Universal Oil Products Company: *See*—
Bieser, Herbert J., 3,813,452.
Gatsis, John G., 3,813,329.
Gattuso, Marion J.; and Arnold, Robert J., 3,813,332.
Geiser, Edward M., 3,813,228.
Hayes, Charles M., 3,813,347.
Kahn, Samuel, 3,813,414.
Massie, Stephen N., 3,813,445.
Massie, Stephen N., 3,813,448.
Symon, Ted, 3,813,450.
Upjohn Company, The: *See*—
Gall, Martin; and Hester, Jackson B., Jr., 3,813,412.
Pike, John E.; and Schneider, William P., 3,813,433.
Urbas, John Christopher. Controlling drainage by addition of longs and fines to stabilize stock system. 3,813,283, Cl. 162-190.000.
Urton, John T., to Vanguard Chemical Company, Inc. Method of producing microcolloidal aqueous emulsions of unsaturated organic compounds. 3,813,345, Cl. 252-312.000.
U.S. Philips Corporation: *See*—
Boonstra, Alexander Hendrik; and Schampers, Paulus Phillippus Maria, 3,813,292.
Cense, Adriaan; and Van Straaten, Jan, 3,813,603.
Coville, Patrick; and Laurencier, Andre, 3,812,908.
De Vries, Jan Lolke; and Liemburg, Alt, 3,813,573.
DeBoer, Jacob, 3,813,559.
Jan Verstegen, Judicus Marinus Pieter; and De Meester, Emiel Petrus Juliaan, 3,813,569.
Knippenberg, Wilhelmus Franciscus; and Verspui, Gerrit, 3,813,340.
Perilhou, Jean Robert; and Auphan, Michel Joseph, 3,812,597.
Trap, Hendrikus Johan Lodewijk, 3,813,276.
Van Dijum, Adalbertus Hermanus Jacobus Nieveen; and Uittenbogaard, Teunis Hermanus, 3,813,602.
Van Esdonk, Johannes, 3,813,293.
Voorman, Johannes Otto, 3,813,607.
Ushihara, Masaharu: *See*—
Sakumoto, Hideki; Namoto, Yoshiteru; Ushihara, Masaharu; Tanigawa, Shizuhiko; and Kanda, Shozo, 3,813,057.
Uskokovic, Milan Radoje; and Williams, Thomas Henry, to Hoffmann-La Roche Inc. 11-Substituted-desa-androstanes. 3,813,442, Cl. 260-586.00h.
USM Corporation: *See*—
Frederick, Eugene G.; Morse, Albert I.; and Simmonds, Robert C., Jr., 3,813,201.
Walton, Richard R.; and Munchback, George E., 3,813,094.
Vacuum Cleaner Corporation of America: *See*—
Meletti, Adolph; and Tamarin, Bernard J., 3,813,501.
Valinsky, Joseph P.: *See*—
United States of America, National Aeronautics and Space Administration, 3,812,924.
Valyi, Emery I. Apparatus for making composite plastic articles. 3,813,198, Cl. 425-112.000.
Valyt, Emery I. Method of laminating plastic to metal. 3,813,315, Cl. 156-254.000.
Van Den Houte, Jozef Willy: *See*—
Laridon, Urbain Leopold; and Van Den Houte, Jozef Willy, 3,813,245.
Van Dijum, Adalbertus Hermanus Jacobus Nieveen; and Uittenbogaard, Teunis Hermanus, to U.S. Philips Corporation. Input circuit for a television tuner. 3,813,602, Cl. 325-319.000.
Van Esdonk, Johannes, to U.S. Philips Corporation. Method of applying a satisfactorily adhering, poorly reflecting, conductive layer to an insulating surface and electric discharge tube having a layer applied by said method. 3,813,293, Cl. 117-217.000.
Van Straaten, Jan: *See*—
Cense, Adriaan; and Van Straaten, Jan, 3,813,603.
Van Toorn, Cornelis Hendrik. Apparatus with built-in thermo-couple for measuring and controlling the temperature of a body. 3,813,515, Cl. 219-471.000.
Vancini, Carlo A.: *See*—
Arnold, Orlan M.; and Vancini, Carlo A., 3,812,658.
Vandenbroek, Martin A.: *See*—
Crowne, Francis R.; Tan, Chiong-Heng; and Vandenbroek, Martin A., 3,813,327.
Vandenhoeck, J. Paul, to Combustion Equipment Associates, Inc. Filter apparatus. 3,812,660, Cl. 55-378.000.
Vanguard Chemical Company, Inc.: *See*—
Urton, John T., 3,813,345.
Vann, Roy R. Retrievable blanking plug. 3,812,911, Cl. 166-135.000.
Varner, Lawrence C., Jr. Elastic foam carpet underlay. 3,813,279, Cl. 161-127.000.
Vartanian, Perry H., Jr.: *See*—
Hedman, Clarence L., Jr.; and Vartanian, Perry H., Jr., 3,813,145.
Vasin, Alexandr Ivanovich: *See*—
Korotkov, Mikhail Mikhailovich; Suldin, Stanislav Mikolaevich; and Vasin, Alexandr Ivanovich, 3,812,806.
Vazirani, Hargovind Nihchaldas, to Bell Telephone Laboratories, Incorporated. Radiation curable styrenated polyester coating compositions and process of curing them. 3,813,322, Cl. 204-159.150.
Vector Company: *See*—
Forssell, Dag C. G.; and Folson, Henry J., 3,812,805.
Veilleux, Joseph C., to Moto-Naute, Inc. Water vehicle. 3,812,814, Cl. 115-70.000.
Velicka, Alvydas: *See*—
Kotuby, Paul M.; and Velicka, Alvydas, 3,813,013.
Venetta, Henry J. Preheating of metal scrap. 3,813,209, Cl. 432-11.000.
Vereinigte Baubeschlagfabriken Gretsch & Co., GmbH: *See*—
Sittmann, Brigitte, 3,813,110.
Vereinigte Flugtechnische Werke-Fekker Gelleschaft mit beschrankter Haftung: *See*—
Geyer, Wolf, 3,813,664.
Vereinigte Flugtechnische Werke-Fokker Gesellschaft mit beschrankter Haftung: *See*—
Pieper, Helmut; and Tober, Gustav, 3,813,258.
Vereinigte Flugtechnische Werke-Fokker, Gesellsschaft mit beschrankter Haftung: *See*—
Meyer, Ulrich, 3,812,750.
Verge, John Pomfret: *See*—
Hughes, Peter Graham; and Verge, John Pomfret, 3,813,401.
Vergobbi, Robert W., to Pneumatic Scale Corporation. Semi-automatic machine for packaging tea bags. 3,812,643, Cl. 53-24.000.
Verspui, Gerrit: *See*—
Knippenberg, Wilhelmus Franciscus; and Verspui, Gerrit, 3,813,340.
Victor Company of Japan, Ltd.: *See*—

Oka, Toshiichiro, 3,813,690.

Viecelli, James A., to United States of America, Atomic Energy Commission. Method and means for producing coherent X-ray and gamma-ray emissions. 3,813,555, Cl. 250-493.000.

Vignini, Walter R., to Sonotone Corporation, mesne. Hearing aid nozzle with resilient bayonet lock. 3,813,499, Cl. 179-107.00h.

Villa, Jose L., to Thiokol Chemical Corporation. Abietate modified polysulfide polymers. 3,813,368, Cl. 260-79.000.

Villard, George, to Eastman Kodak Company. 'Onium indo-n-arylsulfoaniline. 3,813,244, Cl. 96-3.000.

VIP Machinery Inc.: *See*—
Nemeth, Edward; and Gromek, Joseph, 3,812,568.

Vodraska, Kenneth F.: *See*—
Block, Leo; Ashton, Larry J.; and Vodraska, Kenneth F., 3,812,872.

Vogelsang, Dietrich; deceased (by Vogelsang, Ursula, nee Schafer; heir); Scheffler, Gerhard; Brock, Norbert; and Lenke, Dieter, to Asta-Werke Aktiengesellschaft Chemische Fabrik. Basically substituted benzyl phthalazone derivatives, acid salts thereof and rocess for the production thereof. 3,813,384, Cl. 260-239.00a.

Vogelsang, Ursula, nee Schafer: *See*—
Vogelsang, Dietrich; Scheffler, Gerhard; Brock, Norbert; and Lenke, Dieter, 3,813,384.

Volden, Eugene A. Knockdown picture frame. 3,812,609, Cl. 40-155.000.

Volkswagenwerk Aktiengesellschaft: *See*—
Heitland, Herbert; and Manderscheid, Peter, 3,813,226.
Lukaszyk, Hans, 3,812,594.

Von Kaler, Roland L.; and Jolliff, Norman E., to Tecumseh Products Company. Transmission. 3,812,735, Cl. 74-371.000.

Von Tresckow, Hans-Udo; and Davis, Calvin R., to Rexnord Inc. Dynamic stop. 3,812,790, Cl. 104-252.000.

Voorman, Johannes Otto, to U.S. Philips Corporation. Current amplifier. 3,813,607, Cl. 330-17.000.

Vora, Madhukar B.; and Wu, Leon L., to International Business Machines Corporation. Thermal printing device. 3,813,513, Cl. 219-216.000.

Vyzkumny Ustav Bavlnarsky: *See*—
Marsalek, Milan; Junek, Jan; Brynda, Vaclav; Burysek, Frantisek; Hortlik, Frantisek; Ripka, Josef; and Lanta, Jiri, 3,812,667.

Wachs, Marvin Richard; and Berman, Arnold, to Communications Satellite Corporation. Microwave multiplex switch. 3,813,497, Cl. 179-18.0gf.

Wada, Takeo; and Komai, Saburo, to Takeda Chemical Industries, Ltd. Method for expanding mica-group minerals with hydrogen peroxide plus an acid. 3,813,346, Cl. 252-378.00r.

Wada, Yasuo; and Watanabe, Nanao, to Koei Chemical Co., Ltd. Process for preparing 1-alkyl-1,8-naphthyridine compounds. 3,813,406, Cl. 260-295.50b.

Wadlow, David Edward: *See*—
Cowham, Michael John; and Wadlow, David Edward, 3,813,487.

Wagensonner, Eduard; and Winkler, Alfred, to Agfa-Gevaert Aktiengesellschaft. Camera having incrementally controllable aperture. 3,813,680, Cl. 354-44.000.

Wahl, Josef: *See*—
Bauman, Gunther; Schmidt, Peter; Eisele, Hermann; and Wahl, Josef, 3,812,710.

Wahlgren, Wallace W.: *See*—
Doyle, Richard C.; Wahlgren, Wallace W.; and Douglas, Ellwood S., 3,813,579.

Walbrohl, Heinz-Theo. Shiftable support for use in tunnels, mines and the like. 3,812,680, Cl. 61-45.000.

Walker, Richard A.; and Weisner, Ralph M., to Kollmorgen Corporation. Photometric device with a plurality of measuring fields. 3,813,172, Cl. 356-225.000.

Walla, Joann R.: *See*—
Lerner, Irwin S.; and Walla, Joann R., 3,813,465.

Walles, Wielm E.: *See*—
Schmidt, Donald L.; Smith, Hugh B.; and Walles, Wielm E., 3,813,363.

Walser, Albert, Prazisionsmechanik & Werkzeugbau: *See*—
Walser, Alberto, 3,812,630.

Walser, Alberto, to Walser, Albert, Prazisionsmechanik & Werkzeugbau. Method for adjusting machine tools and controlling the machining operation. 3,812,630, Cl. 51-281.00r.

Walter, Lothar; and Schurger, Rainer, to SKF Industrial Trading and Development Company N.V. Axial thrust bearing. 3,813,133, Cl. 308-9.000.

Walton, Richard R.; and Munchback, George E., to USM Corporation. Mechanism for transfering flexible work pieces. 3,813,094, Cl. 271-19.000.

Wanderman, Alice R.: *See*—
Wanderman, Robert M.; and Wanderman, Alice R., 3,812,867.

Wanderman, Robert M.; and Wanderman, Alice R. Capless wig. 3,812,867, Cl. 132-53.000.

Wang Laboratories, Inc.: *See*—
Koplow, Harold Stanley; Eberle, Fritz; Ho, Shu-Kuang; and Lesnick, Edward, 3,812,945.

Wanner, Max; and Schaefer, Erich, to Index-Werke KG Hahn & Tessky. Apparatus for feeding bars in automatic single-spindle bar machines. 3,812,983, Cl. 214-1.200.

Ward, Henry Arthur John, to Electrothermal Engineering Limited. Subjecting samples to elevated temperature. 3,813,215, Cl. 432-226.000.

Ward, Samuel A.: *See*—
Foss, Norman A.; and Ward, Samuel A., 3,813,541.

Wassilieff, Alexander: *See*—
Murphy, Brian Egmont; Burford, John Reginald; and Wassilieff, Alexander, 3,812,859.

Watabe, Kaname; Arai, Kosuke; Taneda, Yasuo; and Naka, Kiyomi, to Teijin Limited. Apparatus for forming relief printing plate from liquid photo-sensitive resin. 3,813,162, Cl. 355-85.000.

Watanabe, Hideyo. Method and apparatus for manufacturing expanded structural members and its products. 3,812,558, Cl. 29-6.100.

Watanabe, Nanao: *See*—
Wada, Yasuo; and Watanabe, Nanao, 3,813,406.

Waterbury Lock & Specialty Co.: *See*—
Bennett, Robert A., 3,812,588.

Watson, Fred D.; and Mohr, John L., to McDonnell Douglas Corporation. Gain change control circuit for time synchronization. 3,813,526, Cl. 235-150.230.

Watson, James Power, to RCA Corporation. Hinged drum system. 3,813,678, Cl. 346-138.000.

Waugh, Clayton Thomas: *See*—
Barnes, John Grober; Bizon, Emil; Murray, Charles Robertson; Rowley, Edward Kenneth; and Waugh, Clayton Thomas, 3,812,769.

Wayne Manufacturing Company: *See*—
Mortensen, Donald G., 3,812,551.

Weatherhead Company, The: *See*—
Courtot, Louis B., 3,812,738.

Webb, Jervis B., Company: *See*—
Boehm, Walter G.; and Torrance, Gordon A., 3,813,087.

Webb, Robert D., to Sigmatron, Inc., mesne. Electroluminescent display system and method of driving the same. 3,813,575, Cl. 315-167.000.

Weber, Heinz Paul: *See*—
Danielmeyer, Hans Guenter; and Weber, Heinz Paul, 3,813,613.

Wehmeyer, Eugene E. Closure device. 3,812,745, Cl. 81-56.000.

Weick, Heinz Hermann: *See*—
Weick, Heinz Hermann; Trueb, Viktor; and Hesener, Walter (said Trueb and said Hesener assors to said), 3,813,275.

Weick, Heinz Hermann; Trueb, Viktor; and Hesener, Walter, said Trueb and said Hesener assors to said Weick, Heinz Hermann. Hand-operated dispenser for applying adhesive tape. 3,813,275, Cl. 156-527.000.

Weigert, Wolfgang: *See*—
Heimberger, Werner; and Weigert, Wolfgang, 3,813,410.

Weikert, Roy J. Tube applicator. 3,812,572, Cl. 29-208.00b.

Weiner, Maurice; Carter, John L.; and Schneider, Sol, to United States of America, Army. Amplifier device. 3,813,608, Cl. 330-34.000.

Weinstein, Bernard: *See*—
Mukai, Cromwell D.; and Weinstein, Bernard, 3,813,343.

Weirzbicke, Edward J.: *See*—
Salmon, David; Weirzbicke, Edward J.; Langston, Benny; and Beegle, Donald W., 3,813,238.

Weisner, Ralph M.: *See*—
Walker, Richard A.; and Weisner, Ralph M., 3,813,172.

Weiss, Dieter. Work locating apparatus. 3,812,766, Cl. 92-14.000.

Weiss, Eduard: *See*—
Hartwimmer, Robert; and Weiss, Eduard, 3,813,449.

Weisser, Werner. Automatically controlled digital VHF direction finder. 3,813,672, Cl. 343-113.00r.

Weisz, Paul B.; and Silvestri, Anthony J., to Mobil Oil Corporation. Demetalation of hydrocarbon charge stocks with manganese nodule catalyst. 3,813,331, Cl. 208-251.00h.

Welch Allyn, Inc.: *See*—
Moore, William C.; and Connors, John D., 3,812,847.

Welch, Ralph E. Elastic facial exerciser. 3,813,096, Cl. 272-82.000.

Wells Electronics, Inc.: *See*—
Larson, Raymond B.; and Wogoman, Frank W., 3,812,581.

Wells, Gilbert J. Heat exchanger. 3,813,039, Cl. 237-55.000.

Wellstein, William. Positive seal pitless well adapter. 3,812,910, Cl. 166-88.000.

Wemyss, Anthony Charles. Device for passing a line around an object. 3,813,122, Cl. 294-19.00r.

Wenger, Maurice J. Positive lock self-retained fastener. 3,812,756, Cl. 85-8.800.

Wenstrup, Leo J.: *See*—
Jasinski, Stanley C.; Wenstrup, Leo J.; and Duffty, Bryant, 3,812,892.

Werner & Pfleiderer, Firma: *See*—
Baur, Hellmuth; and Schraft, Horst, 3,813,216.

Werth, Carl H. Tool arm structure. 3,812,747, Cl. 82-36.00r.

West, Frederick P. Crop orienting mechanism. 3,812,863, Cl. 130-30.00c.

West, James C., to Goodyear Tire & Rubber Company, The. Composite structure and method of preparing the composite structure. 3,813,257, Cl. 117-47.00r.

Westenberger, Walter. High pressure dosing apparatus, especially for grinding and polishing machines. 3,813,044, Cl. 239-533.000.

Westerberg, Sven Peter Jonas, to Atlas Copco Aktiebolag. Torque control device for a nut runner of the continuous torque type. 3,812,744, Cl. 81-52.40r.

Westergren, Folke, to Aktiebolaget Svenska Flaktfabriken. Device for air conditioning a number of rooms having mutually different heat requirements, preferably rooms having a heat requirement varying with time. 3,812,904, Cl. 165-22.000.

Westergren, George A.; Koland, David G.; and Eggert, Thomas F., to Whirlpool Corporation. Canister vacuum cleaner latching means. 3,812,659, Cl. 55-375.000.

Westinghouse Air Brake Company: *See—*
Adkins, Russell M., 3,813,620.
Darrow, John O. G., 3,813,614.
Noble, Peter M., 3,812,934.

Westinghouse Bremsen- und Apparatebau: *See—*
Krieter, Horst, 3,812,876.

Weston Instruments, Inc.: *See—*
Andreaggi, Joseph R., 3,813,004.

Westvaco Corporation: *See—*
Forbes, Hampton E., Jr., 3,812,957.
Shelor, Clifford D., 3,813,285.

Weyer, Herbert: *See—*
Espenschied, Helmut; and Weyer, Herbert, 3,812,942.

Weyer, Rudi: *See—*
Aumuller, Walter; Weyer, Rudi; and Heerdt, Ruth, 3,813,398.

Weyerhaeuser Company: *See—*
Allan, George Graham, 3,813,236.
Fullaway, Altan Vanstone, 3,812,951.

Weyerhauser Company: *See—*
Shelton, Ray T.; and Jensen, Ellsworth O., 3,813,262.

Whalen, Francis Cuthbert, to Elliott Brothers (London) Limited. Variable-area fluid flowmeters. 3,812,715, Cl. 73-209.000.

Whaler, Kenneth R. Portable grill. 3,812,840, Cl. 126-275.00r.

Wheeler, Floyd J., Jr.: *See—*
Scott, Milford M., Jr.; and Wheeler, Floyd J., Jr., 3,812,831.

Whirlpool Corporation: *See—*
Fellwock, Charles G.; Hortin, Kenneth L.; and Tillman, Harry L., 3,813,137.
Westergren, George A.; Koland, David G.; and Eggert, Thomas F., 3,812,659.

Wickens, James Charles: *See—*
Osbond, John Mervyn; and Wickens, James Charles, 3,813,427.

Wideman, Lawson G., to Goodyear Tire & Rubber Company, the. Preparation of 1-butene. 3,813,453, Cl. 260-683.15d.

Wiechert, Rudolf: *See—*
Hofmeister, Helmut; Laurent, Henry; Prezewowsky, Klaus; and Wiechert, Rudolf, 3,813,418.

Wieken, Robert H.; and Potter, Harland C., to Temperature Control, Inc. Smoke eliminator dump chute door. 3,812,797, Cl. 110-18.00a.

Wiese, Winfred J., to Borg-Warner Corporation. Machanical seal with improved leakage control. 3,813,103, Cl. 277-27.000.

Wiesenborn, Robert F.: *See—*
Canfield, Robert C.; Neta, Thomas E.; and Wiesenborn, Robert F., 3,813,451.

Wigby, Jon; and St. Jacques, Leonard, to Burndy Corporation. Strain relief for flat cable or the like. 3,813,634, Cl. 339-17.00f.

Wiget, Fridolin, to Ebauches S.A. Electronic timepiece. 3,812,669, Cl. 58-23.00r.

Wijnant, Petrus Leo Clemens; and Louwaard, Richardus Theodorus Gerardus, to Reactor Centrum Nederland (Stichting). Vibration dampers. 3,813,134, Cl. 308-156.000.

Wildhaber, Ernest, to Bird Island, Inc. Cutting teeth on workpieces. 3,812,759, Cl. 90-3.000.

Wildhaber, Ernest, to Bird Island, Inc. Gear making. 3,812,760, Cl. 90-3.000.

Wilhelm Will KG, Firma: *See—*
Sahm, Bernd, 3,813,132.

Wilhite, Alan Roy: *See—*
Droege, Lee John; Reardon, Michael J.; and Wilhite, Alan Roy, 3,813,310.

Wilkes, Don Earl; Thompson, Charles Larry; and Sedgwick, Alan Fred, to Petty-Ray Geophysical, Inc. Multiple stage sample normalizing amplifier with automatic gain prediction. 3,813,609, Cl. 330-51.000.

Williams, Heyward Sturges; and Robbins, Robert, to LRC, Inc. Voltage control switch driver. 3,813,561, Cl. 307-263.000.

Williams, Laurence Lyman: *See—*
Coscia, Anthony Thomas; and Williams, Laurence Lyman, 3,813,362.

Williams, Thomas Henry: *See—*
Uskokovic, Milan Radoje; and Williams, Thomas Henry, 3,813,442.

Willis, Wilburn C., to Aluminum Company of America. Safety closure assembly. 3,812,990, Cl. 215-9.000.

Willits, Samuel P.: *See—*
Mohan, William L.; and Willits, Samuel P., 3,813,523.

Wilmanns, Ingo, to Leybold-Heraeus-Verwaltung GmbH. Control and monitoring of processes in dependence on the vapor pressure. 3,812,596, Cl. 34-51.000.

Wilson, Ronald M.: *See—*
Boehringer, Raymond H.; Wilson, Ronald M.; and Margeson, Mark A., 3,813,339.

Wilson, William, to Imperial Chemical Industries Limited. Processes for the manufacture of slub effect yarns. 3,812,668, Cl. 57-157.00f.

Winget Limited: *See—*
Tester, Colin Alfred, 3,812,686.

Wingrove, Arthur George: *See—*
Smith, Robert William George; Barron, David Michael Arthur; and Wingrove, Arthur George, 3,813,058.

Winkler, Alfred: *See—*
Wagensonner, Eduard; and Winkler, Alfred, 3,813,680.

Winter, Klaus, to International Telephone and Telegraph Industries, Inc. Vane-type hydraulic pump. 3,813,187, Cl. 417-79.000.

Winterbottom, Kenneth: *See—*
Benisek, Ladislav; Winterbottom, Kenneth; Shaw, Trevor; and Edmondson, Gerald Keith, 3,813,220.

Witco Chemical Corporation: *See—*
Abbott, William J.; and Rankin, Malcolm, 3,812,937.

Witte, Helmut; and Seeliger, Wolfgang, to Chemische Werke Huls Aktiengesellschaft. Process for the production of cyclic imidic acid esters. 3,813,378, Cl. 260-244.000.

Witte, John R. Self-inflatable life preserver apparatus. 3,812,546, Cl. 9-319.000.

Wittle, J. Kenneth: *See—*
Titus, Charles H.; and Wittle, J. Kenneth, 3,812,620.

Wittler, Bernard H.: *See—*
Spanel, Abram N.; Wittler, Bernard H.; and Leszczak, Nicholas, 3,812,799.

Witzel, Gunter; and Muller, Anton, to Eisen- und Drahtwerk Erlau Aktiengesellschaft. Closure member for antiskid chains for tires. 3,812,896, Cl. 152-242.000.

Wobig, Alberto, Armaturenfabrik, Firma: *See—*
Wobig, Alberto Bruno, 3,813,035.

Wobig, Alberto Bruno, to Wobig, Alberto, Armaturenfabrik, Firma. Four-way valve for warm water heaters. 3,813,035, Cl. 236-101.000.

Wogoman, Frank W.: *See—*
Larson, Raymond B.; and Wogoman, Frank W., 3,812,581.

Wolf, Edward M.; and Koll, Stanley J., to American Flange & Manufacturing Co. Inc. Infant feeding package. 3,812,992, Cl. 215-253.000.

Wolf Machine Company, The, mesne: *See—*
Peter, Joseph E., 3,812,584.

Wolf, Milton: *See—*
Sellstedt, John H.; and Wolf, Milton, 3,813,392.

Wolfe, Bruce A., to International Business Machines Corporation. Non-sequential symbol generation system for fluid jet printer. 3,813,676, Cl. 346-75.000.

Wolfson, Alan B., to Procter & Gamble Company, The. Liquid detergent compositions. 3,813,349, Cl. 252-526.000.

Wood, Alvin P.; and Ratts, Kenneth Wayne, to Monsanto Company. Process for preparing methylphosphonothiodic dichloride. 3,813,435, Cl. 260-543.00p.

Wood, Louis L.; Kehr, Clifton L.; and Frisch, Kurt C., to Grace, W. R., & Co. Seed-foam-fabric composite. 3,812,618, Cl. 47-56.000.

Wood, Louis L.; and Frisch, Kurt C., to Grace, W. R., & Co. Horticultural foam structures and method. 3,812,619, Cl. 47-58.000.

Wood, Malcolm Barlow: *See—*
Ezekiel, Aaron David; Thurston, Elvin Frederick William; Harper, Michael Frederick; and Wood, Malcolm Barlow, 3,813,249.

Woodruff, Curtis H., to Cabax Mills. Veneer sorter and stacker. 3,812,964, Cl. 209-73.000.

Woods, Marion D.; and Zvanut, Albert J., to Stoody Company. System for internal-combustion engine valve production. 3,813,509, Cl. 219-76.000.

Wootten, John A.; and Rives, George S., to Lear Siegler, Inc. Method and apparatus for injecting contrast media into the vascular system. 3,812,843, Cl. 128-2.00r.

Wright, William Howell; Bingham, Alex John; and Fox, William Albert, to Allied Chemical Corporation. Method to prepare nylon 6 prepolymer providing a final shaped article of low oligomer content. 3,813,366, Cl. 260-78.001.

Wu, Leon L.: *See—*
Vora, Madhukar B.; and Wu, Leon L., 3,813,513.

Wuenschel, Paul C., to Gulf Research & Development Company. Reproducible shot hole apparatus. 3,812,912, Cl. 166-207.000.

Wurl, Wilhelm, to Coca-Cola Company, The. Pilferproof closure with vertical weakening lines. 3,812,991, Cl. 215-252.000.

Wurlitzer Company, The: *See—*
Ippolito, Anthony C., 3,813,474.

Wycoff, Paul L.: *See—*
Lee, Henry B.; Orem, Donald E.; and Wycoff, Paul L., 3,812,728.

Wydro, John J. Golf visor level device. 3,812,593, Cl. 33-373.000.

Wyeth, John, & Brother Limited: *See—*
Boyle, John Terence Arnoit; and Saunders, John Christopher, 3,813,400.

Xerox Corporation: *See—*
Curtis, David M., 3,813,161.
Fantozzi, Louis J., 3,813,157.
Hagen, James M.; and Haigh, Clayton M., 3,813,056.
Hamerdinger, Randolph W.; and Dunn, Phillip D., 3,812,905.
Silverberg, Morton, 3,813,547.
Silverberg, Morton, 3,813,548.

Xonics, Inc.: *See—*
Proudian, Andrew P., 3,813,546.

Yale, Harry L.; and Petigara, Ramesh B., to Squibb, E. R., & Sons, Inc. 1,2-Dihydroquinobenzoxazepine[piperazinylalkyl] oximes. 3,813,396, Cl. 260-268.0pc.

Yamada, Hirohide, to Tokyo Shibaura Electric Co., Ltd. Data processing system. 3,813,651, Cl. 340-172.500.

Yamaguchi, Terumoto, to Nippondenso Co., Ltd. Method of making commutator for revolving armature. 3,812,576, Cl. 29-597.000.

Yamakyu Chain Kabushiki Kaisha: *See—*
Yoshida, Hiroshi, 3,812,733.

Yamamoto, Samuro. Apparatus for dehydrating a slurry. 3,812,971, Cl. 210-327.000.

Yamane, Nobuo: *See*—
Abe, Yasunori; Yamane, Nobuo; Itoh, Kensaku; Ishida, Shuichi; and Kobayashi, Hisabumi, 3,813,444.
Yamatake-Honeywell Company Limited: *See*—
Akiyama, Tadashi, 3,813,583.
Yamazaki, Masahiko. Separating apparatus. 3,812,970, Cl. 210-316.000.
Yanagawa, Nobuyuki, to Ricoh Co. Ltd. Device for intermittently moving an information card or the like for an adjustable predetermined distance. 3,812,730, Cl. 74-112.000.
Yanagawa, Nobuyuki, to Ricoh Co., Ltd. Power transmitting and zero position restoring device. 3,812,941, Cl. 192-26.000.
Yang, Lien C.; and Menichelli, Vincent J., to United States of America, National Aeronautics and Space Administration. Optically detonated explosive device. 3,812,783, Cl. 102-70.20r.
Yang, Yue-Chyou; and De Quesada, Jorge. Method for erecting a reinforced concrete building. 3,812,637, Cl. 52-745.000.
Yetter, Harry G.: *See*—
Baughman, Herbert W.; and Yetter, Harry G., 3,812,919.
Yoda, Tadashi: *See*—
Nagata, Yoshihiro; Yoda, Tadashi; and Tanaka, Yoshinobu, 3,812,804.
Yoder, Douglas J.: *See*—
Beck, Roger W.; and Yoder, Douglas J., 3,813,311.
Yokokawa, Takio, to Sumitomo Precision Products Company, Limited. Mechanism for preventing the sticking of spool valves. 3,812,883, Cl. 137-625.690.
Yokokawa, Toshiki; and Kawakita, Chihiro, to OKI Electric Industry Co., Ltd. Reed switches and method of manufacturing the same. 3,813,508, Cl. 200-268.000.
Yokoyama, Nobuo; and Ujihara, Takasumi, to Mitsubishi Jukogyo Kabushiki Kaisha. Steel-tower chimney. 3,812,771, Cl. 98-60.000.
Yoshida, Hiroshi, to Yamakyu Chain Kabushiki Kaisha. Tensioning device for flexible members. 3,812,733, Cl. 74-242.11s.
Yoshida Kogyo Kabushiki Kaisha: *See*—
Dori, Hisashi, 3,812,571.
Fukuroi, Takeo, 3,812,573.
Kawakami, Koichi, 3,812,754.
Yoshida, Tadahiro, 3,812,555.
Yoshida, Tadahiro, to Yoshida Kogyo Kabushiki Kaisha. Slide fastener having a filling core. 3,812,555, Cl. 24-205.10c.
Yoshihisa, Saito: *See*—
Tensho, Akira; Kamiya, Takashi; Yoshihisa, Saito; Hashimoto, Masashi; and Hideo, Seki, 3,813,394.
Yoshimine, Masao: *See*—
Hatch, Melvin J.; Yoshimine, Masao; Smith, Hugh B.; and Schmidt, Donald L., 3,813,413.
Yoshioka, Tsuyoshi; and Nishiyama, Sumio, to Daiwa Can Company, Ltd. Container cover. 3,812,993, Cl. 215-256.000.
Yoshitomi Pharmaceutical Industries, Ltd.: *See*—
Nakanishi, Michio; Munakata, Tomohiko; Setoguchi, Shinro; and Fukunari, Sunao, 3,813,395.
Yound, Robert G.; Trible, Paul S.; and Glass, Emmett F., to Sperry Rand Corporation. Mounting structures for the feed mechanism of a crop baler. 3,812,777, Cl. 100-18.900.
Young, John E., Jr.: *See*—
Carr, Norman L.; Massoth, Franklin E.; Stahlfeld, Donald L.; and Young, John E., Jr., 3,812,652.
Massoth, Franklin E.; and Young, John E., Jr., 3,812,653.
Zahn, Wolfgang; Fergg, Berthold; and Knapp, Walter, to Agfa-Gevaert Aktiengesellschaft. Color printer using light flash tubes. 3,813,158, Cl. 255-38.000.
Zahuranec, Emery J.; Bedo, Alfred; and Barth, Ross E., to Crawford Fitting Company. Dispensing package for elongated bodies. 3,812,963, Cl. 206-468.000.
Zaichenko, Jury Leonidovich: *See*—
Rogalsky, Anatoly Viktorovich; Markevich, Vitaly Mikhailovich; Kheifets, Georgy Naumovich; Zaichenko, Jury Leonidovich; Baburov, Valery Efremovich; Pavlovsky, Vladimir Petrovich; Golban, Eduard Vasilievich; Pechennik, Leonid Naumovich; Knyazhinsky, Zakhar sipovich; Bogatov, Nikolai Alexandrovich; Raichuk, Jury Isaakovich; Zaritsky, Vaktor Nikolaevich; and Grodzitsky, Evgeny Fedorovich, 3,812,909.
Zaniuk, Jan: *See*—
Kycia, Henryk; Chmielewska, Danuta; Rolak, Hanna; Michno, Zbigniew; Zaniuk, Jan; Surgiewicz, Janusz; Stefaniak, Ferdynand; Lenkowski, Przemyslaw; and Kobosko, Anna, 3,813,415.
Zaritsky, Vaktor Nikolaevich: *See*—
Rogalsky, Anatoly Viktorovich; Markevich, Vitaly Mikhailovich; Kheifets, Georgy Naumovich; Zaichenko, Jury Leonidovich; Baburov, Valery Efremovich; Pavlovsky, Vladimir Petrovich; Golban, Eduard Vasilievich; Pechennik, Leonid Naumovich; Knyazhinsky, Zakhar sipovich; Bogatov, Nikolai Alexandrovich; Raichuk, Jury Isaakovich; Zaritsky, Vaktor Nikolaevich; and Grodzitsky, Evgeny Fedorovich, 3,812,909.
Zeitler, Gerhard: *See*—
Klocke, Hans Joachim; Stockburger, Dieter; Gierth, Volker; and Zeitler, Gerhard, 3,813,375.
Zeller, Josef: *See*—
Bollig, Georg; Grothe, Horst; Knell, Bernhard; Thalmann, Armin; and Zeller, Josef, 3,812,900.
Zenith Radio Corporation: *See*—
Skerlos, Peter C., 3,812,921.
Ziegler, Arnold H.; and Schweitzer, George J., to Gillman Industries, Inc. Lable attaching machine. 3,812,800, Cl. 112-104.000.
Ziska, John C., to Addressograph-Multigraph Corporation. Plate retainer assembly. 3,812,778, Cl. 101-110.000.
Zollinger, Hans-Rudolf. Method and apparatus for the production of electrical contacts on contact carriers. 3,812,582, Cl. 29-630.00a.
Zucchinelli, Mario: *See*—
delle Porta, Paolo; Giorgi, Tiziano; Kindl, Bruno; and Zucchinelli, Mario, 3,813,266.
Zvanut, Albert J.: *See*—
Woods, Marion D.; and Zvanut, Albert J., 3,813,509.
05/28/74; Ebner, Heinrich; and Enenkel, Anton, to Frings, Heinrich, Firma. Device for aerating liquids. 3,813,086, Cl. 261-93.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 28TH DAY OF MAY, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Boxman, Peter, and F. J. van Roessel, to Philips Broadcast Equipment Corp. Chroma key circuits. Re. 28,021, 5–28–74, Cl. 178—5.40.

Contract Cleaning Co. Pty. Ltd.: *See*—
Lamont, George L. Re. 28,022.

Courtin, Jacques M. Rotary douche for treating breasts. Re. 28,023, 5–28–74, Cl. 128—66.

Dedrick, Dallas S., to Weyerhaeuser Co. Kiln drying process. Re. 28,020, 5–28–74, Cl. 34—30.

Knetemann, Alexander, deceased, by M. Knetemaan, nee Groeneveld, heir; E. L. M. Lelieveld, R. van Rhee, and G. T. Muys, to Lever Brothers Co. Process for the sterilization of solid surfaces. Re. 28,024, 5–28–74. Cl. 21—57.

Knetemann, Marie: *See*—
Knetemann, Alexander, Lelieveld, Van Rhee, and Muys. Re. 28,024.

Lamont, George L., to Contract Cleaning Co. Pty. Ltd. Combined floor-polisher and suction cleaner. Re. 28,022, 5–28–74, Cl. 15—385.

Lelieveld, Hubertus: *See*—
Knetemann, Alexander, Lelieveld, Van Rhee, and Muys. Re. 28,024.

Lever Brothers Co.: *See*—
Knetemann, Alexander, Lelieveld, Van Rhee, and Muys. Re. 28,024.

Matsushita Electric Industrial Co. Ltd.: *See*—
Oka, Shunzo. Re. 28,026.

Murata, Tomoji, and S. Yamaoka. Automatic control device for electronic flash. Re. 28,025, 5–28–74, Cl. 315—151.

Muys, Gerard T.: *See*—
Knetemann, Alexander, Lelieveld, Van Rhee, and Muys. Re. 28,024.

Oka, Shunzo, to Matsushita Electric Industrial Co. Ltd. Sliding-type variable resistor. Re. 28,026, 5–28–74, Cl. 338—183.

Philips Broadcast Equipment Corp.: *See*—
Boxman, Peter, and Van Roessel. Re. 28,021.

Rhee, Renee V.: *See*—
Knetemann, Alexander, Lelieveld, Van Rhee, and Muys. Re. 28,024.

Schmitt, Donald J., to Therm-O-Disc, Inc. Adjustable thermostat. Re. 28,019, 5–28–74, Cl. 337—347.

Thermo-O-Disc, Inc.: *See*—
Schmitt, Donald J. Re. 28,019.

Van Roessel, Frederik J.: *See*—
Boxman, Peter, and Van Roessel. Re. 28,021.

Weyerhaeuser Co.: *See*—
Dedrick, Dallas S. Re. 28,020.

Yamaoka, Sadao: *See*—
Murata, Tomoji, and Yamaoka. Re. 28,025.

LIST OF PLANT PATENTEES

Flanagan, Russell N., to Stark Bro's Nurseries & Orchards Co. Apple tree. 3,557, 5–28–74, Cl. 35.

Hanners, Daniel A., to Stark Bro's Nurseries & Orchards Co. Apple tree. 3,560, 5–28–74, Cl. 35.

Holdren, Robert E. Apple tree. 3,558, 5–28–74, Cl. 34.

Swim, Herbert C., and O. L. Weeks, to O. L. Weeks, d.b.a. Weeks Wholesale Rose Grower. Rose plant. 3,559, 5–28–74, Cl. 28.

Stark Bro's Nurseries & Orchard Co.: *See*—
Flanagan, Russell N. 3,557.
Hanners, Daniel A. 3,560.

Van Well Nursery, Inc.: *See*—
Ward, Arlie M. 3,556.

Ward, Arlie M., to Van Well Nursery, Inc. Apple tree. 3,556, 5–28–74, Cl. 35.

Weeks, O. L.: *See*—
Swim, Herbert C., and Weeks. 3,559.

Weeks Wholesale Rose Grower: *See*—
Swim, Herbert C., and Weeks. 3,559.

LIST OF DESIGN PATENTEES

Arthur, Michael D. Identification clip. 231,714, 5–28–74, Cl. D74—2.

Associated Mills, Inc.: *See*—
Grube, Clifford E. 231,697.
Grube, Clifford E. 231,698.
Grube, Clifford E. 231,699.
Grube, Clifford E. 231,700.
Grube, Clifford E. 231,701.
Grube, Clifford E. 231,702.
Grube, Clifford E. 231,703.

Beckman, Glenn B., to Corning Glass Works, Beverage server. 231,685, 5–28–74, Cl. D7—59.

Christiansen, Godtfred K., to Interlego, A.G. Connecting member for a toy figure. 231,706, 5–28–74, Cl. D34—15.

Christiansen, Godtfred K., to Interlego, A.G. Joint for a toy figure. 231,705, 5–28–74, Cl. D34—15.

Continental Can Co., Inc.: *See*—
Stanley, Thomas R., and Mascia. 231,690.
Stanley, Thomas R., and Mascia. 231,691.

Corning Glass Works: *See*—
Beckman, Glenn B. 231,685.
Reyda, Theodore M. 231,684.

Dattner, Richard, Shelter. 231,692, 5–28–74, Cl. D13—1.

Dattner, Richard, Shelter. 231,693, 5–28–74, Cl. D13—1.

Dattner, Richard, Shelter. 231,694, 5–28–74, Cl. D13—1.

Dattner, Richard, Shelter. 231,695, 5–28–74, Cl. D13—1.

Dattner, Richard, Shelter. 231,696, 5–28–74, Cl. D13—1.

Emhart Corp.: *See*—
Gerlach, John R. 231,688.

Excelsior Hardware Co., The: *See*—
Humphries, John B. 231,689.

Fieni, Walter, to Societe Anonyme Francais du Ferodo. Ashtray. 231,715, 5–28–74, Cl. D85—2.

Flambeau Products Corp.: *See*—
Mason, Leroy W., Hellman, and Rau. 231,707.

Gerlach, John R., to Emhart Corp. U-shaped keeper lock for semi-trailers and the like. 231,688, 5–28–74, Cl. D8—114.

Gillette Co., The: *See*—
Kenney, Peter C., and Tremblay. 231,708.

Grube, Clifford E., to Associated Mills, Inc. Aeration nozzle for a hydrotherapy unit. 231,697, 5–28–74, Cl. D23—34.

Grube, Clifford E., to Associated Mills, Inc. Aeration nozzle for a hydrotherapy unit. 231,698, 5–28–74, Cl. D23—34.

Grube, Clifford E., to Associated Mills, Inc. Aeration nozzle for a hydrotherapy unit. 231,699, 5–28–74, Cl. D23—34.

Grube, Clifford E., to Associated Mills, Inc. Aeration nozzle for a hydrotherapy unit. 231,700, 5–28–74, Cl. D23—34.

Grube, Clifford E., to Associated Mills, Inc. Aeration nozzle for a hydrotherapy unit. 231,701, 5–28–74, Cl. D23—34.

Grube, Clifford E., to Associated Mills, Inc. Aeration nozzle for a hydrotherapy unit. 231,702, 5–28–74, Cl. D23—34.

Grube, Clifford E., to Associated Mills, Inc. Aeration nozzle for a hydrotherapy unit. 231,703, 5–28–74, Cl. D23—34.

Hayes, Jimmy P.: *See*—
Nesbitt, Duane H., and Hayes. 231,713.

Hellman, Werner F.: *See*—
Mason, Leroy W., Hellman, and Rau. 231,707.

Hewson, C. Bruce, to York Lambton Corp. Ltd. Head implement for carpet shampoo machine. 231,686, 5–28–74, Cl. D7—173.

Humphries, John B., to The Excelsior Hardware Co. Drawbolt. 231,689, 5–28–74, Cl. D8—127.

Interlego, A.G.: *See*—
Christiansen, Godtfred K. 231,705.
Christiansen, Godtfred K. 231,706.

Kenney, Peter C., and P. V. Tremblay, to The Gillette Co. Table lighter base. 231,708, 5–28–74, Cl. D48—27.

Mascia, Carmen T.: *See*—
Stanley, Thomas R., and Mascia. 231,690.
Stanley, Thomas R., and Mascia. 231,691.

Mason, Leroy W., W. F. Hellman, and G. A. Rau, to Flambeau Products Corp. Return top. 231,707, 5–28–74, Cl. D34—15.

Mouldings, Inc.: *See*—
Rash, James T., and Peacock. 231,683.

Nesbitt, Duane H., and J. P. Hayes, said Hayes assignor to said Nesbitt. Mail box or similar article. 231,713, 5–28–74, Cl. D74—9.

Peacock, Gary: *See*—
Rash, James T., and Peacock. 231,683.

Pracillo, Francis P. Pneumatically operated injection molding instructional device. 231,709, 5–28–74, Cl. D54—8.

Pracilio, Francis P. Rotational molding instruction device. 231,710, 5–28–74, Cl. D54—8.

Prevot, Oliver C. H. Vegetable cutter. 231,711, 5–28–74, Cl. D55—1.

Rash, James T., and G. Peacock, to Mouldings, Inc. Display stand for strip material. 231,683, 5–28–74, Cl. D6—188.

Rau, Gerald A.: *See*—
Mason, Leroy W., Hellman, and Rau. 231,707.

Reyda, Theodore M., to Corning Glass Works. Condiment dispenser. 231,684, 5–28–74, Cl. D7—54.

Singer Co., The: *See*—
Snitzel, John E. 231,712.

Snitzel, John E., to The Singer Co. Type font. 231,712, 5–28–74, Cl. D64—12.

Societe Anonyme Francais du Ferodo: *See*—
Fieni, Walter. 231,715.

Sperry Rand Corp.: *See*—
Vrabel, Edward J. 231,687.

Stanley, Thomas R., and C. T. Mascia, to Continental Can Co., Inc. Can or similar article. 231,690, 5–28–74, Cl. D9—216.

Stanley, Thomas R., and C. T. Mascia, to Continental Can Co., Inc. Can or similar article. 231,691, 5–28–74, Cl. D9—216.

Tremblay, Peter V.: *See*—
Kenney, Peter C., and Tremblay. 231,708.

Vrabel, Edward J., to Sperry Rand Corp. Shaver assembling tool. 231,687, 5–28–74, Cl. D8—14.

Wale, Kenneth E. Whirling device for demonstrating physics. 231,704, 5–28–74, Cl. D25—1.

York Lambton Corp. Ltd.: *See*—
Hewson, C. Bruce. 231,686.

CLASSIFICATION OF PATENTS

ISSUED MAY 28, 1974

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
69.5 3,812,539
93 3,812,540
237 3,812,541

CLASS 3
1 3,812,542

CLASS 4
7 3,812,543
18 3,812,544
67A 3,812,545

CLASS 8
2.5 3,813,218
115.5 3,813,219
127.6 3,813,220
142 3,813,221

CLASS 9
319 3,812,546

CLASS 10
101 3,812,547
120.5R 3,812,548

CLASS 13
6 3,813,468
9 3,813,469
29 3,813,470

CLASS 15
21D 3,812,549
21E 3,812,550
179 3,812,551
321 3,812,552
385 Re.28,022

CLASS 19
156.3 3,812,553

CLASS 21
57 Re.28,024

CLASS 23
230B 3,813,222
259 3,813,223
273SP 3,813,224
284 3,813,225
288F 3,813,226

CLASS 24
20EE 3,812,554
205.1C 3,812,555
230AK 3,812,556
263A 3,812,557

CLASS 29
6.1 3,812,558
25.18 3,812,559
96 3,812,560
121A 3,812,561
148.4D 3,812,562
149.5PM 3,812,563
156.8R 3,812,564
182.1 3,812,565
182.5 3,813,227
183.5 3,812,566
203B 3,812,569
203D 3,812,567
3,812,568
205D 3,812,570
207.5SL 3,812,571
208B 3,812,572
427 3,812,573
560 3,812,574
594 3,812,575
597 3,812,576
3,812,577
600 3,812,578
603 3,812,579
611 3,812,580
628 3,812,581
630A 3,812,582

CLASS 30
164.9 3,812,583
273 3,812,584

CLASS 32
63 3,812,585

CLASS 33
1C 3,812,586
138 3,812,587
3,812,588
139 3,812,589
172E 3,812,590
174R 3,812,594
199 3,812,591
203.13 3,812,592
373 3,812,593

CLASS 34
10 3,812,595
30 Re.28,020
51 3,812,596
105 3,812,597
155 3,812,598
216 3,812,599

CLASS 35
7R 3,812,600
35H 3,813,471

CLASS 36
2.5AL 3,812,602
2.5AN 3,812,603
2.5C 3,812,601
14 3,812,604
67D 3,812,605
72R 3,812,606

CLASS 37
4 3,812,607
141T 3,812,608

CLASS 40
155 3,812,609

CLASS 42
79 3,812,610

CLASS 44
58 3,813,228

CLASS 46
13 3,812,611
79 3,812,612
119 3,812,613
228 3,812,614

CLASS 47
9 3,812,615
17 3,812,616
41 3,812,617
56 3,812,618
58 3,812,619

CLASS 48
65 3,812,620
196R 3,813,229

CLASS 49
505 3,812,621

CLASS 51
5D 3,812,623
5 3,812,622
115 3,812,624
163 3,812,625
170PT 3,812,626
216R 3,812,629
238R 3,812,627
241VS 3,812,628
281R 3,812,630
297 3,813,230
298 3,813,231

CLASS 52
1 3,812,631
81 3,812,632
169 3,812,633
334 3,812,636
741 3,812,634
3,812,635
745 3,812,637
747 3,812,638
758F 3,812,639

CLASS 53
14 3,812,640
3,812,641
21R 3,812,642
24 3,812,643
29 3,812,644
37 3,812,645
42 3,812,646
62 3,812,647
124A 3,812,648
187 3,812,649

CLASS 54
47 3,812,650

CLASS 55
16 3,812,651
68 3,812,652
3,812,653
92 3,812,654
204 3,812,655
220 3,812,656
223 3,812,657
239 3,812,658
375 3,812,659
378 3,812,660

CLASS 56
14.4 3,812,661
328TS 3,812,662
328R 3,812,663

CLASS 57
34HS 3,812,664
34B 3,812,665
58.52 3,812,666
58.89 3,812,667
157F 3,812,668

CLASS 58
23R 3,812,669
3,812,670

CLASS 60
39.47 3,812,671
244 3,812,672
286 3,812,673
327 3,812,674
413 3,812,675
431 3,812,676
517 3,812,677
591 3,812,678

CLASS 61
42 3,812,679
45C 3,812,680
45D 3,812,681

CLASS 62
6 3,812,682
45 3,812,683
89 3,812,684
93 3,812,685
180 3,812,686
323 3,812,687

CLASS 65
18 3,812,688
23 3,813,232
33 3,812,689
260 3,812,690

CLASS 66
50R 3,812,691
172R 3,812,692

CLASS 71
34 3,813,233
76 3,813,234
92 3,813,235
94 3,813,236
117 3,813,237

CLASS 72
13 3,812,693
21 3,812,694
36 3,812,695
57 3,812,696
60 3,812,697
71 3,812,698
76 3,812,699
79 3,812,700
163 3,812,701
283 3,812,702
326 3,812,703
392 3,812,704

CLASS 73
19 3,812,705
59 3,812,706
61.4 3,812,707
67.5R 3,812,708
3,812,709
114 3,812,710
3,812,711
188 3,812,712
193R 3,812,713
194R 3,812,714
209 3,812,715
341 3,812,716
362SC 3,812,717
368 3,812,718
3,812,719
368.4 3,812,720
422TC 3,812,722
422R 3,812,721
434 3,812,723
458 3,812,724
462 3,812,725
503 3,812,726
516R 3,812,727

CLASS 74
25 3,812,728
56 3,812,729
112 3,812,730
230.17E 3,812,731
240 3,812,732
242.11S 3,812,733
243PC 3,812,734
371 3,812,735
404 3,812,736
425 3,812,737
501R 3,812,738
763 3,812,739

CLASS 75
93R 3,813,238
122 3,813,239
126D 3,813,240
178A 3,813,241

CLASS 76
82 3,812,740

CLASS 81
3.32 3,812,742
3.4 3,812,741
5.1R 3,812,743
52.4R 3,812,744
56 3,812,745

CLASS 82
18 3,812,746
36R 3,812,747

CLASS 83
12 3,812,748
66 3,812,749
471.3 3,812,751
478 3,812,752
522 3,812,753
622 3,812,754
835 3,812,755

CLASS 84
1.03 3,813,472
1.16 3,813,473
1.17 3,813,474

CLASS 85
8.8 3,812,756
61 3,812,757
62 3,812,758

CLASS 90
3 3,812,759
3,812,760
4 3,812,761
10 3,812,762
11A 3,812,763
11R 3,812,764

CLASS 91
387 3,812,765

CLASS 92
14 3,812,766
48 3,812,767

CLASS 93
1C 3,812,768
35R 3,812,769

CLASS 96
1R 3,813,242
1.5 3,813,243
3,813,248
3 3,813,244
48R 3,813,245
60BF 3,813,246
67 3,813,249
68 3,813,247
76R 3,813,250
114 3,813,251

CLASS 98
40D 3,812,770
60 3,812,771
110 3,812,772

CLASS 99
290 3,812,773
323.8 3,812,774
404 3,812,775
421H 3,812,776

CLASS 100
189 3,812,777

CLASS 101
110 3,812,778
115 3,812,779
216 3,812,780
298 3,812,781
367 3,812,782

CLASS 102
70.2R 3,812,783
95 3,812,784
100 3,812,785

CLASS 104
88 3,812,786
96 3,812,787
130 3,812,788
3,812,789
252 3,812,790

CLASS 105
393 3,812,791

CLASS 106
84 3,813,253

CLASS 108
56 3,812,792

CLASS 110
8C 3,812,795
8R 3,812,793
3,812,794
10 3,812,796
18A 3,812,797
99R 3,812,798

CLASS 112
79R 3,812,799
104 3,812,800
121.14 3,812,801
218R 3,812,802

CLASS 113
121C 3,812,803

CLASS 114
16R 3,812,804
61 3,812,805
66.5H 3,812,806
74R 3,812,807
78 3,812,808
114 3,812,809
197 3,812,810
218 3,812,811

CLASS 115
34R 3,812,812
70 3,812,813
3,812,814

CLASS 116
28R 3,812,815
70 3,812,816
114R 3,812,817
124.1 3,812,818
135 3,812,819

CLASS 117
12 3,813,254
33.3 3,813,255
47H 3,813,256
47R 3,813,257
71M 3,813,258
100C 3,813,259
114R 3,813,260
153 3,813,261
155UA 3,813,262
201 3,813,263
3,813,264
211 3,813,265
212 3,813,266
3,813,291
215 3,813,292
217 3,813,293
218 3,813,294
221 3,813,295
229 3,813,296

CLASS 118
3 3,812,820
418 3,812,821

CLASS 119
17 3,812,822
54 3,812,823

CLASS 122
32 3,812,824
34 3,812,825
250R 3,812,826

CLASS 123
8.01 3,812,827
8.45 3,812,828
32EA 3,812,830
32VN 3,812,829
117A 3,812,831
119A 3,812,832

CLASS 124
10 3,812,833
20R 3,812,834
24R 3,812,835

CLASS 126
9R 3,812,836
21A 3,812,837
3,812,838
38 3,812,839
275R 3,812,840

CLASS 127
66 3,813,297
69 3,813,298

CLASS 128
1R 3,812,841
2A 3,812,842
2R 3,812,843
2.05G 3,812,844
2.06R 3,812,845
9 3,812,847
36 3,812,848
57 3,812,846
66 Re.28,023
67 3,812,849
80A 3,812,850
133 3,812,851
134 3,812,852
173 3,812,853
194 3,812,854
276 3,812,855
285 3,812,856
303.1 3,812,857
303.14 3,812,858
330 3,812,859
349B 3,812,860
418 3,812,861
578 3,812,862

CLASS 139
30C 3,812,863

CLASS 131
2 3,812,864
171A 3,812,865

CLASS 132
40 3,812,866
53 3,812,867
75.4 3,812,868

CLASS 134
24 3,813,299
111 3,812,869
122 3,812,870

CLASS 136
38 3,813,300
86A 3,813,301

CLASS 137
1 3,812,871
62 3,812,872
84 3,812,873
110 3,812,874
454.6 3,812,875
501 3,812,876
505.42 3,812,877
512 3,812,878
512.15 3,812,879
516.15 3,812,880
556.6 3,812,882
596.14 3,812,881
625.69 3,812,883

CLASS 138
105 3,812,884
125 3,812,885
149 3,812,886

CLASS 139
29 3,812,887

CLASS 141

39 3,812,888
93 3,812,889
94 3,812,890

CLASS 144

3R 3,812,891
309AC 3,812,892
326 3,812,893

CLASS 145

50R 3,812,894

CLASS 148

6.15R 3,813,302
3,813,303

CLASS 149

19.2 3,813,304
19.3 3,813,305
19.9 3,813,306
19.91 3,813,307
109 3,813,308

CLASS 151

41.74 3,812,895

CLASS 152

241 3,813,049
242 3,812,896

CLASS 156

2 3,813,309
3 3,813,310
17 3,813,311
39 3,813,312
156 3,813,313
162 3,813,314
236 3,813,267
238 3,813,268
254 3,813,315
272 3,813,269
382 3,813,270
417 3,813,271
468 3,813,272
469 3,813,273
527 3,813,274
3,813,275

CLASS 159

49 3,812,897

CLASS 161

1 3,813,276
24 3,813,277
82 3,813,278
127 3,813,279
151 3,813,280
159 3,813,281
164 3,813,282

CLASS 162

190 3,813,283
219 3,813,284
263 3,813,285

CLASS 164

25 3,812,898
52 3,812,899
76 3,812,900
87 3,812,901
208 3,812,902

CLASS 165

3 3,812,903
22 3,812,904
32 3,812,905
44 3,812,906
83 3,812,907
105 3,812,908
120 3,812,909

CLASS 166

88 3,812,910
135 3,812,911
207 3,812,912
2[illegible] 3,812,913

CLASS 169

20 3,812,914
38 3,812,915

CLASS 172

7 3,812,916
15 3,812,917
19 3,812,918
328 3,812,919
350 3,812,920

CLASS 174

21C 3,813,475
37 3,813,476
70R 3,813,477
3,813,478
88C 3,813,479
92 3,813,480
130 3,813,481

CLASS 175

6 3,812,922

CLASS 176

19R 3,813,286
68 3,813,287

CLASS 177

1 3,812,923
200 3,812,924

CLASS 178

5.1 3,813,482
5.4ST 3,813,490
5.4R Re.28,021
6 3,813,483
6.6FS 3,813,484
6.8 3,813,485
7.1 3,813,486
3,813,487
3,813,488
7.2 3,813,489
7.3R 3,812,921
7.81 3,813,491
30 3,813,492

CLASS 179

1GO 3,813,494
1.5S 3,813,493
7MM 3,813,495
15BS 3,813,496
18GF 3,813,497
100.3R 3,813,498
107H 3,813,499
175.2C 3,813,500

CLASS 180

6.48 3,812,925
9.24 3,812,926
54A 3,812,927
65F 3,812,928
98 3,812,929
117 3,812,930

CLASS 181

33E 3,812,931

CLASS 182

126 3,812,932

CLASS 185

37 3,812,933

CLASS 188

62 3,812,934
71.8 3,812,935
106P 3,812,750
171 3,812,936
266 3,812,937
322 3,812,938

CLASS 190

49 3,812,939

CLASS 191

12.2R 3,813,501
30 3,813,502

CLASS 192

17 3,812,940
26 3,812,941
91R 3,812,942
93A 3,812,943
105B 3,812,944

CLASS 195

4 3,813,288
3,813,289
28R 3,813,290
3,813,316
29 3,813,317
31F 3,813,318
65 3,813,319
66R 3,813,320

CLASS 197

19 3,812,945
129 3,812,946

CLASS 198

19 3,812,947
20R 3,812,948
21 3,812,949
31AA 3,812,950
34 3,812,951
57 3,812,952
131 3,812,953
138 3,812,954
170 3,812,955
213 3,812,956

CLASS 200

11TC 3,813,503
48R 3,813,504
61.45R 3,813,505
144B 3,813,506
148A 3,813,507
268 3,813,508

CLASS 204

149 3,813,321
159.15 3,813,322
181 3,813,323
195B 3,813,325
195M 3,813,324
268 3,813,326
300 3,813,327
302 3,813,328

CLASS 206

45.14 3,812,957
45.31 3,812,958
320 3,812,959
338 3,812,961
387 3,812,960
427 3,812,962
468 3,812,963

CLASS 208

9 3,813,329
66 3,813,330
251H 3,813,331
290 3,813,332

CLASS 209

47.4M 3,812,965
73 3,812,964

CLASS 210

33 3,813,333
70 3,812,966
174 3,812,967
242 3,812,968
274 3,812,969
316 3,812,970
321 3,813,334
327 3,812,971
489 3,812,972
502 3,812,973

CLASS 211

23 3,812,974
40 3,812,975
60T 3,812,976
177 3,812,977

CLASS 212

35R 3,812,979

CLASS 213

76 3,812,980
201 3,812,978

CLASS 214

1BB 3,812,981
1QA 3,812,982
1.2 3,812,983
15B 3,812,984
83.32 3,812,985
84 3,812,986
87 3,812,987
505 3,812,988

CLASS 215

9 3,812,989
3,812,990
252 3,812,991
253 3,812,992
256 3,812,993
3,812,994

CLASS 219

76 3,813,509
121LM 3,813,511
121P 3,813,510
158 3,813,512
216 3,813,513
354 3,813,514
438 3,813,517
471 3,813,515
3,813,516
3,813,518
522 3,813,519
543 3,813,520

CLASS 220

1.5 3,812,995
21 3,812,996
22 3,812,997
30.5 3,812,998
41 3,812,999
54 3,813,000
3,813,001
63R 3,813,002
94R 3,813,003
96 3,813,004

CLASS 221

90 3,813,005

CLASS 222

4 3,813,007
70 3,813,008
90 3,813,009
129.1 3,813,010
136 3,813,011
326 3,813,012
402.2 3,813,013
413 3,813,014
445 3,813,015

CLASS 224

5R 3,813,016
26R 3,813,017
33R 3,813,018

CLASS 226

97 3,813,019
3,813,020

CLASS 228

1 3,813,006
3,813,021
3 3,813,022
19 3,813,023
58 3,813,024

CLASS 229

2.5 3,813,025
4.5 3,813,026
45 3,813,027
70 3,813,028

CLASS 232

17 3,813,029

CLASS 233

18 3,813,030
26 3,813,031

CLASS 235

61.11D 3,813,521
92PE 3,813,525
92SB 3,813,523
92T 3,813,524
98R 3,813,522
150.23 3,813,526
151.34 3,813,527
152 3,813,528
3,813,529
153AC 3,813,532
153AK 3,813,531
153A 3,813,530
156 3,813,533
176 3,813,623
183 3,813,532

CLASS 236

9R 3,813,033
87 3,813,034
101 3,813,035

CLASS 237

2R 3,813,036
9R 3,813,037
55 3,813,039

CLASS 238

37 3,813,038
84 3,813,040

CLASS 239

55 3,813,041
193 3,813,042
204 3,813,043
533 3,813,044

CLASS 240

2.25 3,813,534
57 3,813,535
67 3,813,536
108R 3,813,537

CLASS 241

88.4 3,813,045
202 3,813,046
211 3,813,047
224 3,813,048

CLASS 242

18A 3,813,050
46.4 3,813,051
58.3 3,813,052
58.4 3,813,053
86.5A 3,813,055
86.5R 3,813,054
197 3,813,056
198 3,813,057

CLASS 243

16R 3,813,058

CLASS 244

3.22 3,813,067
12C 3,813,059
13 3,813,060
16 3,813,061
3,813,062
77D 3,813,063
114R 3,813,064
115 3,813,065
150 3,813,066

CLASS 246

122R 3,813,538

CLASS 248

14 3,813,068
188.1 3,813,069
223 3,813,070
251 3,813,071
313 3,813,072
373 3,813,073
452 3,813,074
461 3,813,075

CLASS 249

50 3,813,076

CLASS 250

206 3,813,539
3,813,540
211J 3,813,541
221 3,813,542
281 3,813,544
306 3,813,545
315 3,813,546
324 3,813,547
3,813,548
3,813,549
338 3,813,550
3,813,551
347 3,813,552
3,813,553
461 3,813,554
493 3,813,555
562 3,813,543
575 3,813,556

CLASS 251

9 3,813,077
28 3,813,078
127 3,813,079
285 3,813,080

CLASS 252

14 3,813,335
32.7E 3,813,336
33.4 3,813,337
42.1 3,813,338
56S 3,813,339
62.3C 3,813,340
77 3,813,341
111 3,813,343
170 3,813,342
301.1R 3,813,344
312 3,813,345
378R 3,813,346
428 3,813,347
431N 3,813,348
520 3,813,252
526 3,813,349
547 3,813,350

CLASS 254

131 3,813,081

CLASS 259

6 3,813,082
8 3,813,083
72 3,813,084

CLASS 260

2EP 3,813,351
3,813,352
2.1C 3,813,353
2.2R 3,813,354
2.5AB 3,813,355
2.5F 3,813,356
5 3,813,357
16 3,813,358
17.4ST 3,813,359
28 3,813,379
29.2TN 3,813,361
29.2N 3,813,362
29.3 3,813,363
37SB 3,813,364
63UY 3,813,447
77.5AP 3,813,380
77.5R 3,813,365
78L 3,813,366
3,813,367
79 3,813,368
80.6 3,813,369
88.02S 3,813,370
88.2R 3,813,381
88.5 3,813,371
88.7R 3,813,372
92.8W 3,813,373
94.3 3,813,374
94.9GD 3,813,375
112.5 3,813,382
236.5 3,813,383
239A 3,813,384
239.1 3,813,385
3,813,386
239.6 3,813,387
243C 3,813,376
3,813,388
3,813,389
3,813,390
3,813,391
244R 3,813,378
249.5 3,813,393
250R 3,813,392
251A 3,813,360
252 3,813,394
268PC 3,813,396
268TR 3,813,395
268C 3,813,397
279R 3,813,377
283SA 3,813,398
287OX 3,813,399
292 3,813,403
3,813,404
293.6R 3,813,405
295AM 3,813,400
295.5B 3,813,406
296B 3,813,407
296H 3,813,408
302H 3,813,401
306.7 3,813,409
307F 3,813,410
307H 3,813,411
308R 3,813,412
330.5 3,813,413
343.2R 3,813,414
3,813,415
343.6 3,813,416
345.2 3,813,417
372 3,813,402
397.4 3,813,418
397.45 3,813,420
397.5A 3,813,419
398 3,813,421
429R 3,813,422
429.3 3,813,423
429.7 3,813,424
448.2E 3,813,425
453R 3,813,426
468H 3,813,427
471R 3,813,429
479R 3,813,430
505R 3,813,431
514D 3,813,433
514H 3,813,432
532 3,813,428
534E 3,813,434
543P 3,813,435
553A 3,813,436
3,813,437
561N 3,813,438
564F 3,813,439
566AC 3,813,440
567.6 3,813,441
586H 3,813,442
586R 3,813,443
607A 3,813,444
620 3,813,445
622R 3,813,446
650R 3,813,448
653.1R 3,813,449
654R 3,813,450
671P 3,813,451
674SA 3,813,452
683.15D 3,813,453
873 3,813,454
879 3,813,455
968 3,813,456
971 3,813,457

CLASS 261

39B 3,813,085
93 3,813,086

CLASS 264

3C 3,813,458
23 3,813,459
28 3,813,460
41 3,813,461
45 3,813,462
3,813,463

CLASS 266

2A 3,813,087
25 3,813,088

CLASS 267

160 3,813,089

CLASS 269

217 3,813,090
322 3,813,091
3,813,092

CLASS 270

55 3,813,093

CLASS 271

19 3,813,094

CLASS 272

78 3,813,095
82 3,813,096

CLASS 273

25 3,813,097
72R 3,813,098
156 3,813,099

CLASS 274

23A 3,813,100
38 3,813,101

CLASS 277

9 3,813,102
27 3,813,103
94 3,813,104
164 3,813,105
173 3,813,106
189 3,813,107

CLASS 279

4 3,813,108

CLASS 280

11.35T 3,813,110
11.35Y 3,813,109
33.99R 3,813,111
150AB 3,813,112
150R 3,813,113
434 3,813,114

CLASS 285

92 3,813,115
236 3,813,116

CLASS 290

2 3,813,557

CLASS 292

54 3,813,117
3,813,118
122 3,813,119
251 3,813,120

CLASS 294

1R 3,813,121
19R 3,813,122
87.2 3,813,123

CLASS 297

191 3,813,147
231 3,813,148
335 3,813,149
353 3,813,150

396 3,813,151

CLASS 298

17B 3,813,124

CLASS 299

7 3,813,125
33 3,813,126

CLASS 302

27 3,813,127
39 3,813,128

CLASS 303

21B 3,813,129
21F 3,813,130

CLASS 305

29 3,813,131

CLASS 307

221R 3,813,558
237 3,813,559
253 3,813,560
263 3,813,561
273 3,813,562
279 3,813,563
3,813,564
308 3,813,565

CLASS 308

3A 3,813,132
9 3,813,133
156 3,813,134
188 3,813,135
213 3,813,136

CLASS 310

36 3,813,566
50 3,813,567

CLASS 312

214 3,813,137
309 3,813,138

CLASS 313

92R 3,813,568
108R 3,813,569
318 3,813,570
326 3,813,571

CLASS 315

3 3,813,572
13C 3,813,573
29 3,813,574
151 Re.28,025
167 3,813,575
205 3,813,576

CLASS 317

16 3,813,577
3,813,578
18D 3,813,579
23 3,813,580
96 3,813,581
101DH 3,813,582
148.5B 3,813,583
235D 3,813,584
235N 3,813,587
235R 3,813,585
3,813,586
3,813,588

CLASS 318

227 3,813,589
266 3,813,590
331 3,813,591
696 3,813,592

CLASS 321

9R 3,813,593
18 3,813,594

CLASS 323

4 3,813,595

CLASS 324

16R 3,813,596
176 3,813,597

CLASS 325

49 3,813,598
67 3,813,599
126 3,813,600
141 3,813,601
319 3,813,603

CLASS 329

122 3,813,604

CLASS 330

4.3 3,813,605
13 3,813,606
17 3,813,607
34 3,813,608
51 3,813,609

CLASS 331

1A 3,813,610
94.5G 3,813,612
94.5Q 3,813,611
94.5 3,813,613
108B 3,813,614
109 3,813,615
116R 3,813,616

CLASS 332

31R 3,813,617

CLASS 333

72 3,813,618
81R 3,813,602

CLASS 335

16 3,813,619
78 3,813,620
99 3,813,621
151 3,813,622
206 3,813,624
263 3,813,625

CLASS 337

245 3,813,626
274 3,813,627
322 3,813,628
324 3,813,629
347 Re.28,019
360 3,813,630

CLASS 338

183 Re.28,026
320 3,813,631

CLASS 339

10 3,813,632
14R 3,813,633
17F 3,813,634
22B 3,813,635
59R 3,813,636
3,813,637
64R 3,813,638
111 3,813,639
156R 3,813,640
170 3,813,641
198R 3,813,642
223S 3,813,643
252S 3,813,644
259R 3,813,645

CLASS 340

3D 3,813,654
18LD 3,813,656
26 3,813,657
146.3AE 3,813,646
146.3K 3,813,658
3,813,659
151 3,813,655
172.5 3,813,647
3,813,648
3,813,649
3,813,650
3,813,651
3,813,652
173FF 3,813,653
174EB 3,813,660
174TF 3,813,661
213R 3,813,662
248A 3,813,665
3,813,666
3,813,667
248R 3,813,664
274 3,813,663
347P 3,813,668
373 3,813,673

CLASS 343

5PD 3,813,669
7.3 3,813,670
112D 3,813,671
113R 3,813,672
730 3,813,674

CLASS 346

75 3,813,675
3,813,676
76R 3,813,677
138 3,813,678

CLASS 350

3.5 3,813,139
7 3,813,140
96WG 3,813,141
3,813,142
97 3,813,143
150 3,813,144
160LC 3,813,145
285 3,813,146

CLASS 351

153 3,813,152

CLASS 352

12 3,813,153
169 3,813,154

CLASS 353

101 3,813,155
119 3,813,156

CLASS 354

24 3,813,679
44 3,813,680
173 3,813,681
203 3,813,682
292 3,813,683
341 3,813,684

CLASS 355

14 3,813,157
38 3,813,158
44 3,813,164
53 3,813,159
71 3,813,160
75 3,813,161
85 3,813,162
109 3,813,163

CLASS 356

5 3,813,165
28 3,813,166
74 3,813,167
97 3,813,168
127 3,813,169
138 3,813,170
152 3,813,171
225 3,813,172
239 3,813,173
241 3,813,174

CLASS 358

2 3,813,685
27 3,813,686

CLASS 360

8 3,813,687
17 3,813,688
74 3,813,689
90 3,813,690
3,813,691
113 3,813,692
119 3,813,693

CLASS 401

65 3,813,175
94 3,813,176

CLASS 403

27 3,813,177
3,813,178
348 3,813,179

CLASS 404

48 3,813,180
84 3,813,181

CLASS 408

72 3,813,182
80 3,813,183

CLASS 415

54 3,813,184

CLASS 416

198 3,813,185
226 3,813,186

CLASS 417

79 3,813,187
202 3,813,188
220 3,813,189
236 3,813,190
406 3,813,191
416 3,813,192

CLASS 418

63 3,813,193
82 3,813,194
86 3,813,195

CLASS 423

20 3,813,464

CLASS 424

3 3,813,465
28 3,813,466

CLASS 425

7 3,813,196
111 3,813,197
112 3,813,198
113 3,813,199
140 3,813,200
242 3,813,201
404 3,813,202
441 3,813,203
466 3,813,204

CLASS 426

393 3,813,467

CLASS 431

94 3,813,205
143 3,813,206
255 3,813,207
277 3,813,208

CLASS 432

11 3,813,209
15 3,813,210
80 3,813,211
121 3,813,213
144 3,813,214
183 3,813,212
226 3,813,215
230 3,813,216
258 3,813,217

CLASSIFICATION OF DESIGNS

D6— 188 231,683
D7— 54 231,684
59 231,685
173 231,686
D8— 14 231,687
114 231,688
127 231,689
D9— 216 231,690
231,691
D13— 1D 231,692
231,693
231,694
231,695
231,696
D23— 24 231,699
231,700
34 231,697
231,698
231,701
231,702
231,703
D25— 1R 231,704
D34— 15AH 231,707
FF 231,705
GG 231,706
D48— 27R 231,708
D54— 8 231,709
231,710
D55— 1A 231,711
D64— 12B 231,712
D74— 2 231,714
9R 231,713
D85— 2J 231,715

CLASSIFICATION OF PLANTS

P. — 28 3,559
P. — 34 3,558
P. — 35 3,556
P. — 3,557
P. — 3,560

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama..... 1
Alaska..... 2
American Samoa..... 3
Arizona..... 4
Arkansas..... 5
California..... 6
Canal Zone..... 7
Colorado..... 8
Connecticut..... 9
Delaware..... 10
District of Columbia..... 11
Florida..... 12
Georgia..... 13
Guam..... 14
Hawaii..... 15
Idaho..... 16
Illinois..... 17
Indiana..... 18
Iowa..... 19
Kansas..... 20
Kentucky..... 21
Louisiana..... 22
Maine..... 23
Maryland..... 24
Massachusetts..... 25
Michigan..... 26
Minnesota..... 27
Mississippi..... 28
Missouri..... 29
Montana..... 30
Nebraska..... 31
Nevada..... 32
New Hampshire..... 33
New Jersey..... 34
New Mexico..... 35
New York..... 36
North Carolina..... 37
North Dakota..... 38
Ohio..... 39
Oklahoma..... 40
Oregon..... 41
Pennsylvania..... 42
Puerto Rico..... 43
Rhode Island..... 44
South Carolina..... 45
South Dakota..... 46
Tennessee..... 47
Texas..... 48
Utah..... 49
Vermont..... 50
Virginia..... 51
Virgin Islands..... 52
Washington..... 53
West Virginia..... 54
Wisconsin..... 55
Wyoming..... 56
U.S. Air Force..... 57
U.S. Army..... 58
U.S. Navy..... 59

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 : 3,812,918
3,812,936
3,813,091
3,813,167
3,813,183
3,813,233
3,813,305
3,813,307
3,813,552
2 : 3,813,064
4 : 3,812,541
3,812,583
3,812,931
3,813,022
3,813,032
3,813,055
3,813,467
3,813,584
3,813,588
3,813,650
5 : 3,813,652
6 : 3,812,929
3,812,542
3,812,551
3,812,559
3,812,579
3,812,589
3,812,603
3,812,628
3,812,631
3,812,637
3,812,641
3,812,682
3,812,716
3,812,723
3,812,726
3,812,727
3,812,728
3,812,732
3,812,751
3,812,774
3,812,783
3,812,785
3,812,805
3,812,835
3,812,836
3,812,848
3,812,853
3,812,854
3,812,857
3,812,861
3,812,865
3,812,872
3,812,878
3,812,879
3,812,884
3,812,888
3,812,905
3,812,917
3,812,923
3,812,924
3,812,995
3,813,012
3,813,016
3,813,017
3,813,018
3,813,033
3,813,037
3,813,049
3,813,056
3,813,067
3,813,095
3,813,099
3,813,103
3,813,105
3,813,116
3,813,120
3,813,125
3,813,138
3,813,145
3,813,146
3,813,148
3,813,156
3,813,159
3,813,172
3,813,188
3,813,191
3,813,207
3,813,289
3,813,325
3,813,334
3,813,336
3,813,379
3,813,383
3,813,478
3,813,480
3,813,485
3,813,498
3,813,509
3,813,516
3,813,528
3,813,529
3,813,533
3,813,538
3,813,546
3,813,555
3,813,560
3,813,571
3,813,575
3,813,577
3,813,579
3,813,581
3,813,597
3,813,599
3,813,612
3,813,626
3,813,636
3,813,647
3,813,653
3,813,663
3,813,667
3,813,670
3,813,671
3,813,687
3,813,688
3,813,693
8 : 3,812,679
3,812,977
3,813,310
3,813,314
3,813,456
3,813,624
3,813,692
9 : 3,812,588
3,812,606
3,812,649
3,812,658
3,812,708
3,812,758
3,812,776
3,812,802
3,812,860
3,812,862
3,813,013
3,813,021
3,813,063
3,813,362
3,813,465
3,813,494
3,813,541
3,813,634
3,813,640
3,813,673
10 : 3,812,957
3,812,988
3,813,685
11 : 3,812,903
12 : 3,812,548
3,812,611
3,812,655
3,812,663
3,812,707
3,812,794
3,812,810
3,812,849
3,813,435
3,813,493
3,813,678
13 : 3,812,684
3,812,816
3,812,822
3,812,863
16 : 3,813,351
17 : 3,812,569
3,812,595
3,812,608
3,812,612
3,812,613
3,812,624
3,812,626
3,812,634
3,812,639
3,812,651
3,812,683
3,812,704
3,812,746
3,812,757
3,812,798
3,812,832
3,812,868
3,812,886
3,812,919
3,812,921
3,812,928
3,812,959
3,812,962
3,812,967
3,813,001
3,813,027
3,813,074
3,813,100
3,813,119
3,813,123
3,813,129
3,813,149
3,813,155
3,813,160
3,813,180
3,813,190
3,813,228
3,813,238
3,813,268
3,813,298
3,813,312
3,813,318
3,813,329
3,813,332
3,813,347
3,813,355
3,813,371
3,813,445
3,813,448
3,813,450
3,813,452
3,813,491
3,813,517
3,813,523
3,813,524
3,813,535
3,813,545
3,813,570
18 : 3,812,539
3,812,570
3,812,581
3,812,592
3,812,647
3,812,656
3,812,695
3,812,772
3,812,827
3,812,974
3,812,990
3,813,137
3,813,179
3,813,294
3,813,311
3,813,337
3,813,358
3,813,389
3,813,407
3,813,408
3,813,419
3,813,527
3,813,534
3,813,580
19 : 3,812,920
3,813,578
20 : 3,812,661
3,812,842
3,812,851
3,813,000
3,813,270
3,813,345
21 : 3,813,192
3,813,193
22 : 3,812,722
3,812,930
3,813,421
24 : 3,812,618
3,812,619
3,812,712
3,812,841
3,813,062
3,813,166
3,813,177
3,813,308
3,813,403
3,813,434
3,813,458
3,813,471
3,813,496
3,813,497
3,813,586
3,813,598
3,813,658
3,813,659
25 : 3,812,553
3,812,561
3,812,629
3,812,640
3,812,643
3,812,646
3,812,767
3,812,812
3,812,833
3,812,897
3,812,915
3,812,945
3,812,958
3,812,982
3,813,003
3,813,011
3,813,020
3,813,053
3,813,070

3,813,072
3,813,079
3,813,094
3,813,098
3,813,142
3,813,201
3,813,210
3,813,295
3,813,369
3,813,431
3,813,511
3,813,596
3,813,627
3,813,641
3,813,660
3,813,669
26 : 3,812,557
3,812,566
3,812,600
3,812,607
3,812,614
3,812,672
3,812,676
3,812,678
3,812,735
3,812,747
3,812,792
3,812,869
3,812,925
3,812,935
3,812,981
3,813,042
3,813,051
3,813,073
3,813,087
3,813,092
3,813,111
3,813,114
3,813,126
3,813,140
3,813,178
3,813,214
3,813,230
3,813,299
3,813,301
3,813,363
3,813,365
3,813,412
3,813,433
3,813,512
3,813,522
3,813,637
3,813,638
3,813,645
27 : 3,812,546
3,812,609
3,812,659
3,812,784
3,812,791
3,812,797
3,812,877
3,812,975
3,813,005
3,813,010
3,813,297
3,813,592
28 : 3,813,189
3,813,443
29 : 3,812,698
3,812,740
3,812,741
3,812,745
3,812,838
3,812,840
3,813,075
3,813,106

3,813,184
3,813,197
3,813,221
3,813,234
3,813,320
3,813,426
3,813,504
3,813,526
3,813,625
3,813,635
3,813,639
30 : 3,812,616
3,812,815
31 : 3,812,737
3,812,834
3,812,961
32 : 3,812,826
3,812,831
33 : 3,813,039
3,813,510
3,813,531
3,813,561
34 : Re.28,021
3,812,544
3,812,568
3,812,574
3,812,615
3,812,633
3,812,717
3,812,729
3,812,734
3,812,736
3,812,799
3,812,824
3,812,825
3,812,894
3,812,966
3,812,972
3,812,989
3,812,992
3,813,004
3,813,061
3,813,141
3,813,150
3,813,174
3,813,182
3,813,204
3,813,219
3,813,256
3,813,280
3,813,290
3,813,322
3,813,330
3,813,342
3,813,343
3,813,359
3,813,367
3,813,368
3,813,381
3,813,396
3,813,409
3,813,411
3,813,414
3,813,416
3,813,417
3,813,439
3,813,442
3,813,454
3,813,464
3,813,466
3,813,482
3,813,488
3,813,506
3,813,550
3,813,553
3,813,576

3,813,582
3,813,595
3,813,601
3,813,608
3,813,622
3,813,661
3,813,665
35 : 3,812,793
3,812,911
3,813,413
36 : 3,812,540
3,812,545
3,812,547
3,812,635
3,812,660
3,812,671
3,812,688
3,812,689
3,812,748
3,812,759
3,812,760
3,812,779
3,812,786
3,812,800
3,812,801
3,812,811
3,812,817
3,812,847
3,812,850
3,812,852
3,812,855
3,812,858
3,812,867
3,812,922
3,812,960
3,812,969
3,812,994
3,812,997
3,813,006
3,813,028
3,813,036
3,813,089
3,813,121
3,813,139
3,813,147
3,813,157
3,813,161
3,813,169
3,813,173
3,813,198
3,813,222
3,813,232
3,813,241
3,813,244
3,813,247
3,813,251
3,813,260
3,813,261
3,813,263
3,813,265
3,813,286
3,813,309
3,813,315
3,813,316
3,813,364
3,813,388
3,813,397
3,813,404
3,813,425
3,813,430
3,813,462
3,813,474
3,813,477
3,813,492
3,813,499
3,813,513

3,813,514
3,813,520
3,813,547
3,813,548
3,813,549
3,813,554
3,813,556
3,813,558
3,813,566
3,813,568
3,813,593
3,813,600
3,813,616
3,813,619
3,813,666
3,813,676
37 : 3,812,554
3,812,864
3,812,887
3,812,978
3,813,124
3,813,181
3,813,500
39 : Re.28,019
3,812,562
3,812,563
3,812,572
3,812,577
3,812,584
3,812,617
3,812,738
3,812,778
3,812,803
3,812,843
3,812,856
3,812,895
3,812,898
3,812,901
3,812,910
3,812,932
3,812,944
3,812,946
3,812,949
3,812,953
3,812,963
3,812,979
3,813,015
3,813,077
3,813,104
3,813,164
3,813,171
3,813,195
3,813,199
3,813,205
3,813,209
3,813,257
3,813,259
3,813,269
3,813,271
3,813,279
3,813,313
3,813,339
3,813,349
3,813,350
3,813,357
3,813,374
3,813,446
3,813,453
3,813,455
3,813,463
3,813,470
3,813,521
3,813,633
3,813,649
3,813,675
40 : 3,812,662

3,812,674
3,812,780
3,812,882
3,813,081
3,813,212
3,813,272
41 : 3,812,549
3,812,622
3,812,813
3,812,964
42 : 3,812,564
3,812,580
3,812,585
3,812,593
3,812,620
3,812,627
3,812,636
3,812,638
3,812,653
3,812,690
3,812,696
3,812,703
3,812,718
3,812,719
3,812,720
3,812,753
3,812,756
3,812,777
3,812,839
3,812,899
3,812,912
3,812,934
3,812,937
3,813,066
3,813,078
3,813,090
3,813,097
3,813,107
3,813,131
3,813,135
3,813,223
3,813,224
3,813,254
3,813,264
3,813,281
3,813,285
3,813,304
3,813,306
3,813,321
3,813,326
3,813,331
3,813,338
3,813,348
3,813,353
3,813,361
3,813,382
3,813,386
3,813,392
3,813,402
3,813,420
3,813,475
3,813,501
3,813,539
3,813,589
3,813,590
3,813,614
3,813,629
3,813,642
3,813,643
3,813,657
3,813,668
44 : 3,812,591
3,812,881
3,812,914
45 : 3,813,525
3,813,594

3,813,620
46 : 3,812,610
3,812,625
3,813,143
47 : 3,812,665
3,812,709
3,813,031
3,813,034
3,813,096
3,813,165
3,813,495
48 : 3,812,543
3,812,552
3,812,587
3,812,621
3,812,700
3,812,706
3,812,742
3,812,789
3,812,795
3,812,846
3,812,913
3,812,947
3,812,980
3,812,986
3,813,002
3,813,029
3,813,030
3,813,038
3,813,040
3,813,115
3,813,170
3,813,186
3,813,231
3,813,328
3,813,428
3,813,451
3,813,562
3,813,609
3,813,656
49 : 3,812,685
3,812,828
3,812,829
3,812,926
51 : 3,812,550
3,812,648
3,812,650
3,813,200
3,813,366
3,813,481
3,813,591
3,813,644
53 : Re.28,020
3,812,724
3,812,951
3,813,065
3,813,076
3,813,236
3,813,262
54 : 3,813,117
3,813,225
55 : 3,812,711
3,812,845
3,812,873
3,812,889
3,813,024
3,813,046
3,813,047
3,813,068
3,813,296
3,813,632
56 : 3,812,654

DESIGN PATENTS

6 : 231,688
8 : 231,713
9 : 231,687
231,689
17 : 231,690

231,691
231,697
231,698
231,699
231,700

231,701
231,702
231,703
25 : 231,708

32 : 231,683
36 : 231,684
231,685
231,692

231,693
231,694
231,695
231,696

231,709
231,710
231,712
55 : 231,707

PLANT PATENTS

6 : 3,559

24 : 3,557

39 : 3,558

40 : 3,560

53 : 3,556

U. S. GOVERNMENT PRINTING OFFICE : O - 1974

U.S. DEPARTMENT OF COMMERCE
Frederick B. Dent, *Secretary*

PATENT OFFICE
C. Marshall Dann, *Commissioner*